

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 3-46	
						<input type="checkbox"/> Other <input type="checkbox"/> Amendment Number:	
Contract Number EP-C-12-021		Contract Period 09/26/2012 To 09/25/2016		Title of Work Assignment/SF Site Name			
		Base Option Period Number 3		Nutrient Challenge Support			
Contractor EASTERN RESEARCH GROUP, INC.				Specify Section and paragraph of Contract SOW 3.0 and 4.0			
Purpose: <input checked="" type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input type="checkbox"/> Work Plan Approval				Period of Performance From 09/26/2015 To 09/25/2016			
Comments: Work shall not commence on this Work Assignment until September 26, 2015.							
<input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund							
SFO (Max 2) <input type="checkbox"/> Note: To report additional accounting and appropriations data use EPA Form 1900-69A.							
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars) (Cents) Site/Project (Max 8) Cost Org/Code (Max 7)
1							
2							
3							
4							
5							
Authorized Work Assignment Ceiling							
Contract Period: 09/26/2012 To 09/25/2016		Cost/Fee:		LOE:			
This Action:							
Total:							
Work Plan / Cost Estimate Approvals							
Contractor WP Dated:		Cost/Fee:		LOE:			
Cumulative Approved:		Cost/Fee:		LOE:			
Work Assignment Manager Name Lael Butler						Branch/Mail Code:	
_____ (Signature) (Date)						Phone Number 228-688-1576	
						FAX Number:	
Project Officer Name Meghan Hessenauer						Branch/Mail Code:	
_____ (Signature) (Date)						Phone Number: 202-566-1040	
						FAX Number:	
Other Agency Official Name						Branch/Mail Code:	
_____ (Signature) (Date)						Phone Number:	
						FAX Number:	
Contracting Official Name Brad Heath						Branch/Mail Code:	
_____ (Signature) (Date)						Phone Number: 513-487-2352	
						FAX Number:	

**Performance Work Statement
Contract EP-C-12-021
Work Assignment 3-46**

Title: Interagency Nutrient Challenge Visioneering Support

Work Assignment Contracting

Officer's Representative (WACOR): Lael Butler

Period of Performance (POP): September 26, 2015 through September 25, 2016

New Contracting Terminology From Environmental Protection Agency Acquisition Guide (EPAAG) Subsection 1.6.5
Contract-Level Contracting Officer's Representative (CL-COR) = Project Officer (PO)
Alternate Contract-Level Contracting Officer's Representative (Alternate CL-COR) = Alternate Project Officer (APO)
Work Assignment Contracting Officer's Representative (WACOR) = Work Assignment Manager (WAM)
Alternate Work Assignment Contracting Officer's Representative (Alternate WACOR) = Alternate Work Assignment Manager (AWAM)

Background

Recent years have seen advances in the research and development of newer, more portable and sometimes, lower cost water quality sensors and analytical capabilities. These developments, along with the proliferation of real-time software platforms and hydrologic models provide new opportunities for local, State, Regional, Tribes and Federal organizations, along with communities, to not only monitor water quality in real-time, but be able to better respond to emergency situations, encourage compliance with regulations and manage highly variable water quality and quantity.

The U. S. Environmental Protection Agency's (EPA) Office of Research and Development is continuing to lead efforts by a federal interagency Partner workgroup by identifying additional areas for research and prizes; and, supporting efforts which include, but are not limited to, visioneering meetings, principle meetings, workshops, conference calls, videoconference communications, or webinars,

Under the existing contract and current work assignment, the Contractor has been providing, and will continue to provide, expertise in nutrient pollution, water resources management and water quality issues; along with meeting planning and stakeholder outreach/engagement. All current Contractor tasks will continue.

Scope of Work

The Contractor shall liaise with the EPA on the planning and execution of all nutrient challenge meetings and any associated partner meetings, principle meetings, workshops, conference calls, videoconference communications, webinars, beta-test events, social media marketing; and, other venues as directed. Specifically, the Contractor shall perform duties associated with the development of meetings, workshops, calls and all other communication venues. The contractor shall also provide support for the development and implementation of a pilot or demonstration project utilizing real-time nutrient sensors identified from the nutrient sensor challenge.

Tasks

1. Communication Support:

- a. The Contractor will initiate and/or continue conference calls with the Federal interagency work group on nutrient prizes coordinated by OSTP for planning, coordination and communication. The calls may vary in length, not to exceed one hour each, and the Contractor shall take notes and distribute after the call. The Contractor shall supplement the work group with other non-Federal partners as needed to optimize the task(s) completion; all in consultation with the EPA and the prize expert, where appropriate.
- b. The Contractor, with input from EPA, shall prepare communication materials for use in the planning and completion of future nutrient challenge work as well as work in other related areas.
- c. The Contractor, with input from EPA, shall provide support for needed aspects of the nutrient sensor challenge(s) in the effort to stimulate development and marketing of an affordable nutrient sensor, including but not limited to, the development of specific challenge elements, a timeline(s), identify/review partners and partnerships to enlarge the working group, suggest and/or implement involvement, develop scope and/or roll-out plan for the challenge(s); and, serve as a liaison with others as needed (ACT, Hypoxia Task Force, Academia, Non-Government Organizations), as needed.
- d. The Contractor, with input from EPA, shall perform additional tasks, including but not limited to, support for subsequent visioning meetings, principal meetings, workshops, bi-weekly partner conference calls, weekly project team conference calls, videoconference events, webinars and in-person meetings.
- e. The Contractor, with input from EPA, shall provide other communication strategy support including web input, fact sheet input/development, outreach, marketing product input/development, publicity, and other administrative support.

2. Workshop(s) & Webinar(s)

At the direction of EPA, the Contractor shall organize and execute a series of webinars and a workshop(s) with the goal of identifying and summarizing needs and requirements of innovative, existing, and/or emerging water sensor and data management technologies for the management of water quality in real-time short and long-term planning.

The Contractor shall work with the WACOR to determine speakers and topics for all communication events. The Contractor will provide: (1) a draft agenda, (2) a list of participants, potential speakers, moderator, other key specific audience participants and participant categories.

For the Workshop(s):

- a. The Workshop (s) will have a select number of invited speaker presentations followed by question/answer sessions.
- b. The Contractor shall construct and perform logistical tasks including, but not limited to, securing room blocks, constructing registration website and all instructions, secure release forms for presentations, obtain/organize their power point presentations, coordinate with the EPA audiovisual support personnel, manage/track overall timing and flow of the Workshop sessions; and arrange for flip charts, stick pins, markers, etc., as needed.
- c. The Contractor shall construct Workshop information packets, as needed.
- d. The Workshop(s) will be broadcast via webinar or similar technology whereby interested parties can remotely participate (see/hear) to the presentations.
- e. The Workshop(s) shall also include EPA panel discussions on needs and requirements.
- f. The Contractor will staff the registration table, providing participant name tags, information packets, and EPA handouts.
- g. The Contractor shall take notes during the workshop to inform the report after the meeting.
- h. A report(s) shall be generated summarizing the results and discussion so that participants can share and discuss.
- i. The Contractor will post the presentations after the Workshop(s) and provide edited notes to EPA.

For the Webinar(s), the Contractor, with input from EPA, will:

- a. Schedule 4-6 webinars approximately 1 hour in length to highlight EPA uses and/or needs of new water sensor technology.
- b. Webinars will be recorded and made available on a website for later viewing.
- c. Webinars will allow for questions to be collected, responses made and summarized in a single report document.
- d. A "SharePoint" directory may be developed to allow people to make comments.

3. Pilot or Demonstration Project(s)

At the direction of EPA, the Contractor will support the development and implementation of several pilot or demonstration projects. The pilot or demonstration projects will add a component to the nutrient sensor challenge whereby top performing sensors will be eligible for specific pilot or demonstration opportunities (e.g. edge of field, septic systems, wastewater). The responsibilities will include, but are not limited to: outreach, logistics, support marketing and design, agenda preparation or other project materials, note-taking and video/photo-documentation.

Deliverables and Schedule

1. The Contractor shall develop a new work plan in accordance with contract requirements.
2. The Contractor shall participate in periodic conference calls to discuss progress and issues with the Workshop team(s).
3. The Contractor shall schedule webinar events, necessary web and phone capabilities for 4-6 webinars and expect to schedule approximately 1 webinar per month leading up a workshop(s).
4. The Contractor will record all webinars and host them on an internet with within 10 days of the webinar.
5. The Contractor will document all questions asked during webinars and/or workshops.
6. The Contractor shall provide a save the date email for webinars/workshops.
7. The Contractor shall set up webinar and/or workshop registration sites.
8. The Contractor shall provide draft workshop information packet 10 days prior to any workshop.
9. The Contractor shall provide a list of all webinar/workshop(s) registrants to the WACOR within 10 days of conclusion of the event.
10. The Contract shall post available power point presentations with the approvals on a password protected ftp site within 10 working days of a webinar/workshop(s).
11. The Contractor shall provide notes taken during webinars/workshops within 10 working days of conclusion.

Travel

The EPA anticipates the need for local and non-local travel by the Contractor employees and/or subcontractors to support the scope of work. The Contractor will provide specific travel details and costs in a request for travel approval submitted for WACOR review and Contract-Level COR (CL-COR) signature before each trip occurs (as specified by the contract per clause H.32).

Management Controls

The Contractor shall contact the WACOR to present and discuss the work plan for this work assignment and/or amendment before it is approved by the Contracting Officer (CO). The duration of this work assignment is from date of issuance through the end of the performance period.

Event Expenses Not to Exceed \$20,000

No single event under this Work Assignment is anticipated to exceed \$20,000. The Contractor shall immediately notify the CO, CL-COR and WACOR of any anticipated event involving support for a meeting, conference, workshop, symposium, retreat, seminar or training that may potentially incur \$20,000 or more in cost during performance. Conference expenses are all direct and indirect costs paid by the government and include any associated authorized travel and per diem expenses, room charges for official business, audiovisual use, light refreshments, registration fees, ground transportation and other expenses as defined by the Federal Travel Regulations. All outlays for conference preparation should be included, but the federal employee time for conference preparation should not be included. After notifying EPA of the potential to reach this threshold, the Contractor shall not proceed with the task(s) until authorized to do so by the CO.

Confidential Business Information

The contractor shall, at all times, adhere to Confidential Business Information (CBI) procedures when handling industry information. The contractor shall manage all reports, documents, and other materials and all draft documents developed under this work assignment in accordance with the procedures set forth in the "Security Plan for Handling Confidential Business Information Under the Clean Water Act" (September 2002) or its successor approved plans.

Identification as Contracting Staff

To avoid the perception that contractor personnel are EPA employees, contractor personnel shall be clearly identified as independent contractors of EPA when participating in events with outside parties and visiting field sites. When speaking with the public the contractor should refer all interpretations of policy to the WACOR.

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 3-52				
						<input type="checkbox"/> Other <input type="checkbox"/> Amendment Number:				
Contract Number EP-C-12-021			Contract Period 09/26/2012 To 09/25/2016 Base Option Period Number 3			Title of Work Assignment/SF Site Name BASINS Support and Maintenance				
Contractor EASTERN RESEARCH GROUP, INC.				Specify Section and paragraph of Contract SOW See PWS						
Purpose: <input checked="" type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input type="checkbox"/> Work Plan Approval						Period of Performance From 05/19/2016 To 09/25/2016				
Comments:										
<input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund										
SFO <input type="checkbox"/> Note: To report additional accounting and appropriations date use EPA Form 1900-69A. (Max 2)										
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										
Authorized Work Assignment Ceiling										
Contract Period:		Cost/Fee:			LOE:					
09/26/2012 To 09/25/2016										
This Action:										
Total:										
Work Plan / Cost Estimate Approvals										
Contractor WP Dated:				Cost/Fee			LOE:			
Cumulative Approved:				Cost/Fee			LOE:			
Work Assignment Manager Name Stephen Kraemer <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: 706-355-8340 FAX Number:			
Project Officer Name Meghan Hessenauer <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: 202-566-1040 FAX Number:			
Other Agency Official Name <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: FAX Number:			
Contracting Official Name Brad Heath <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: 513-487-2352 FAX Number:			

**PERFORMANCE WORK STATEMENT
CONTRACT EP-C-12-021
WORK ASSIGNMENT 3-52**

TITLE: BASINS Support and Maintenance

WORK ASSIGNMENT CONTRACTING OFFICER REPRESENTATIVE (WACOR):

Stephen Kraemer
USEPA National Exposure Research Laboratory/ORD
Ecosystems Research Division
960 College Station Road
Athens, GA 30605-2700

Phone: 706-355-8340

Email: kraemer.stephen@epa.gov

PERIOD OF PERFORMANCE: May 19, 2016 through September 25, 2016

TASKS:

NLDAS and NCDC Meteorological Data for BASINS, D4EM, and SDMPProjectBuilder

Modeling microbes overland and instream by HSPF requires a full suite of HSPF MET inputs (e.g., water temperature in the stream reach for GQUAL and snow by the full energy balance method in HSPF). The purpose of this effort is to allow the user to specify a meteorological (MET) data source and have software that accesses and retrieves specified MET data for use by models consistent with HSPF and BASINS. MET data sources include the BASINS MET data archive, NLDAS, and NCDC with the latter requiring a user-assigned token. The enhancements would be consistent and support BASINS, D4EM, and SDMPProjectBuilder. Three options would be made available through user interfaces: BASINS met data archive at epa.gov, online NCDC, and online NLDAS. The software has already implemented the BASINS MET data archive. If the user specifies a data source other than the BASINS MET data archive, then the software would download data from the specified source, convert the full suite of HSPF MET constituents into the proper HSPF units, import to a WDM file, and use the imported data in subsequent HSPF UCI files. This enhancement may require BASINS, D4EM (D4EM.Models.HSPF), and/or SDMPProjectBuilder user interface changes. MET data, relevant to HSPF, include:

1. Precipitation (inches)
2. Potential Evapotranspiration (inches)
3. Air Temperature (degrees F)
4. Wind speed (mph)
5. Solar Radiation (Langley's)
6. Dew-point Temperature (degrees F)
7. Cloud cover (tenths)

8. Evaporation

The NLDAS datasets are not specifically designed to populate specific models, such as HSPF; therefore, conversions algorithms may be required to transform NLDAS MET data to meet the specific needs of HSPF. This effort will include developing and implementing appropriate algorithms for the conversions. Appendix A provides suggestions on details of calculating the full suite of HSPF MET inputs, including methods for solar radiation, dew-point temperature, and cloud cover.

In the event of missing MET data or incomplete datasets (possibly associated with NCDC), a procedure will be devised to fill missing data, as much as reasonable, such as expanding the area of interest which is consistent with the current procedures.

Deliverables:

- Revised SDMPProjectBuilder installation and source code checked into the corresponding GitHub repository.
- Revised BASINS source code and installation.
- Revised D4EM.Models.HSPF source code checked into the GitHub repository.
- Updated SDMPB tutorial explaining the use of the MET data acquisition alternatives at an actual site (e.g., Manitowoc).

NHDPlus Version 2

Most watershed modeling efforts require delineated catchments and stream networks along with attributes describing these features. The National Hydrography Dataset Plus (NHDPlus) is an integrated suite of application-ready geospatial data sets that incorporate many of the best features of the National Hydrography Dataset (NHD), National Elevation Dataset (NED), and Watershed Boundary Dataset (WBD). Current versions of D4EM, SDMPB and BASINS use data from Version 1.0 of the NHDPlus dataset. Data from NHDPlus Version 1 were custom processed into HUC8 subbasin zip file packages.

This effort will upgrade the D4EM components to use the latest version of the NHDPlus dataset (i.e., Version 2.1). The preferred method is to access existing web services available through the EPA Office of Water's Watershed Assessment, Tracking & Environmental Results System (WATERS) program. This will allow the data to be up to date with enhancements made to the data. Two services are available: WATER Web Services and WATERS Mapping Services. NHDPlus Version 2 data and documentation and EPA WATERS web services can be found at Horizon-Systems (2016) and EPA (2015), respectively.

Deliverables:

- Evaluate the feasibility of reproducing the existing NHDPlus functionality with new functionality using WATERS web and mapping services. Include all spatial and attribute data. Document approach and discrepancies. Propose alternate approach, if needed. Deliverable is a memo.
- Revised D4EM.Data.Source.NHDPlus source code, which has been checked into the GitHub repository. Document revisions following the QAPP for the contract.

- Integrate D4EM components in SDMPB and BASINS. Document revisions following the QAPP for the contract.
- Compare and report data outputs between current and new versions. Document revisions following the QAPP for the contract.
- Update SDMPB and BASINS code, in the GitHub repository.
- Updated or provide an SDMPB tutorial explaining the use of the NHDPlus v2 data at an actual site (e.g., Manitowoc).

NOTES/ASSUMPTIONS

The existing BASINS Quality Assurance Project Plan (QAPP) will be used.

General Work Assignment Requirement:

Deliverable Formatting and Terminology

Throughout this Work Assignment, the contractor shall provide draft and final reports to EPA in electronic and hard copy formats. The WACOR and contractor will use the terminology in this work assignment to improve the deliverable review process. The contractor shall discuss the computer file formats to be used for word processing, spreadsheet, database and graphics with the WACOR prior to file preparation. The WACOR will identify for the contractor which documents will be posted on EPA's Effluent Guidelines webpage. The documents posted to the Effluent Guidelines webpage will need to be Section 508 compliant. For planning purposes, the contractor should assume that a Response to Comments document may be posted to the webpage.

Travel

Non-local travel by the contractor employees and/or subcontractors may be required to support the scope of this work assignment. The contractor shall provide specific travel details and costs in a request for travel approval by the WACOR and the Contract-Level COR (CL-COR) before each trip occurs (as specified by the contract per clause H.32).

Confidential Business Information

The contractor will, at all times, adhere to Confidential Business Information (CBI) procedures when handling industry information. The contractor will manage all reports, documents, and other materials and all draft documents developed under this work assignment in accordance with the procedures set forth in its "Office of Science & Technology Confidential Business Information (OST-CBI) Application Security Plan," dated December 5, 2007 or its successor approved plans.

Identification as Contracting Staff

To avoid the perception that contractor personnel are EPA employees, contractor personnel shall be clearly identified as independent contractors of EPA when participating in events with outside parties and visiting field sites. When speaking with the public, the contractor should refer all interpretations of policy to the WACOR.

Limitation of Contractor Activities

The contractor shall submit drafts of all deliverables to the WACOR for review prior to submission of the final product. The contractor shall incorporate all WACOR comments into all final deliverables, unless otherwise agreed upon by the WACOR. The contractor shall adhere to all applicable EPA management control procedures as implemented by the Contracting Officer (CO), CL-COR and WACOR.

Deliverables

Major technical reports shall be subject to internal contractor peer review by an expert(s) not directly involved in the mainstream Work Assignment tasks. Deliverables will be prepared with proper adherence to EPA style and format requirements.

Deadlines

For the purpose of developing the work plan, the contractor shall assume the deliverable due dates provided with each task. Most of the deadlines are associated with Agency milestones which are subject to change. Any changes in schedule tend to result in extensions, rather than shorter schedules. In either case, if the schedule changes then the CL-COR or WACOR will change the deliverable deadlines through written technical direction. The CL-COR or WACOR also will use written technical direction to change a deadline if management requires any particular deliverable earlier than specified in the following tasks. For any deliverable, no deadline will extend beyond the WA period of performance.

Conferences, Meetings and Other Events

No single event under this Work Assignment is anticipated to exceed \$20,000. The Contractor shall immediately notify the CO, CL-COR and WACOR of any anticipated event involving support for a meeting, conference, workshop, symposium, retreat, seminar or training that may potentially incur \$20,000 or more in cost during performance. Conference expenses are all direct and indirect costs paid by the government and include any associated authorized travel and per diem expenses, room charges for official business, audiovisual use, light refreshments, registration fees, ground transportation and other expenses as defined by the Federal Travel Regulations. All outlays for conference preparation should be included, but the federal employee time for conference preparation should not be included. After notifying EPA of the potential to reach this threshold, the Contractor shall not proceed with the task(s) until authorized to do so by the CO.

APPENDIX A NOTES

Example Transformations between NLDAS Meteorological Data and HSPF Meteorological Data Requirements

A. Potential Evaporation and Total Evapotranspiration

Some definitions:

1. Potential evaporation is the same as potential evapotranspiration, which is the evaporation plus transpiration from a vegetated surface with unlimited water supply.
2. Actual evaporation is the amount of water evaporated, not the amount which could have been evaporated.

Based on these definitions, assign

1. NLDAS Total Evapotranspiration to the HSPF Total Evaporation
2. NLDAS Potential Evaporation to the HSPF Potential Evapotranspiration

B. [Solar Radiation] versus [shortwave and longwave radiation] (UWSP, 2015)

Some definitions:

1. Shortwave radiation corresponds to solar radiation is shortwave radiation.
2. Longwave radiation corresponds to terrestrial radiation.

Based on these definitions, assign

1. NLDAS shortwave radiation to the HSPF Solar Radiation

C. Calculating Dew Point Temperature from Specific Humidity (EOL-UCAR, 2016)

1. Compute the vapor pressure from specific humidity
2. Then compute the Dew Point Temperature from the vapor pressure.

D. Cloud Cover (LACR, 2016)

1. Ensure that shortwave radiation is used in the calculation

Suggested transformations are presented in Table A.1 followed by a discussion and example calculations.

Table A.1. Suggested Transformations between NLDAS Meteorological Data and HSPF Meteorological Data Requirements

HSPF Parameter Abbr	HSPF Parameter	NLDAS Parameter	NLDAS Parameter Description	NLDAD Parameter Units	Sample URL
PREC	Hourly Precipitation	APCPsfc	Precipitation hourly total (includes snow)	kg/m ²	http://hydro1.sci.gsfc.nasa.gov/daac-bin/access/timeseries.cgi?variable=NLDAS:NLDAS_FORA0125_H.002:APCPsfc&location=NLDAS:X304-Y071&startDate=2015-01-01T00&endDate=2015-06-20T23&type=asc2
PEVT	Hourly Potential Evapotranspiration	PEVAPsfc	Potential evaporation	kg/m ²	http://hydro1.sci.gsfc.nasa.gov/daac-bin/access/timeseries.cgi?variable=NLDAS:NLDAS_NOAH0125_H.002:EVPSfc&location=NLDAS:X304-Y071&startDate=2015-01-01T00&type=asc2
ATEM	Hourly Air Temperature	TMP2m	2-m above ground temperature	K	http://hydro1.sci.gsfc.nasa.gov/daac-bin/access/timeseries.cgi?variable=NLDAS:NLDAS_FORA0125_H.002:TMP2m&location=NLDAS:X304-Y071&startDate=2015-01-01T00&endDate=2015-06-20T23&type=asc2
WIND	Hourly Wind Speed	UGRD10m	10-m above ground zonal wind	m/s	http://hydro1.sci.gsfc.nasa.gov/daac-bin/access/timeseries.cgi?variable=NLDAS:NLDAS_FORA0125_H.002:UGRD10m&location=NLDAS:X304-Y071&startDate=2015-01-01T00&endDate=2015-06-20T23&type=asc2
		VGRD10m	10-m above ground meridional wind	m/s	
SOLR	Hourly Solar Radiation	DSWRFsfc	Surface DW shortwave radiation flux	W/m ²	http://hydro1.sci.gsfc.nasa.gov/daac-bin/access/timeseries.cgi?variable=NLDAS:NLDAS_FORA0125_H.002:DSWRFsfc&location=NLDAS:X304-Y071&startDate=2015-01-01T00&endDate=2015-06-20T23&type=asc2
DEWP	Hourly Dew Point Temperature	SPFH2m	2-m above ground specific humidity	kg/kg	http://hydro1.sci.gsfc.nasa.gov/daac-bin/access/timeseries.cgi?variable=NLDAS:NLDAS_FORA0125_H.002:SPFH2m&location=NLDAS:X304-Y071&startDate=2015-01-01T00&endDate=2015-06-20T23&type=asc2
CLOU	Hourly Cloud Cover	DSWRFsfc	Surface DW shortwave radiation flux	W/m ²	http://scool.larc.nasa.gov/lesson_plans/CloudCoverSolarRadiation.pdf
EVAP	Hourly Total Evaporation	EVPSfc	Total evapotranspiration	kg/m ²	http://hydro1.sci.gsfc.nasa.gov/daac-bin/access/timeseries.cgi?variable=NLDAS:NLDAS_FORA0125_H.002:PEVAPsfc&location=NLDAS:X304-Y071&startDate=2015-01-01T00&endDate=2015-06-20T23&type=asc2

```

U = -sin(direction) * wind_speed;
V = -cos(direction) * wind_speed
Wind_speed = square_root(U*U + V*V);
if V < 0 then Wind_direction = arctan(U/V) * 180/PI;
Else Wind_direction = arctan(U/V) * 180/PI + 180;

```

```

qair2rh <- function(qair, temp, press = 1013.25){
  es <- 6.112 * exp((17.67 * temp)/(temp + 243.5))
  e <- qair * press / (0.378 * qair + 0.622)
  rh <- e / es
  rh[rh > 1] <- 1
  rh[rh < 0] <- 0
  return(rh)
}
Td = T - ((100 - RH)/5.)

```

$F = [(990 - P) / 742.5]^{(1/3)}$ from $P = 990$ (1-0.75F³) watts/m² Where P is solar (short wave) radiation, and F is cloud cover as fraction

<https://github.com/PecanProject/pecan/blob/master/modules/data.atmosphere/R/metutils.R>

```
##' Convert specific humidity to relative humidity
##'
##' converting specific humidity into relative humidity
##' NCEP surface flux data does not have RH
##' from Bolton 1980 The computation of Equivalent Potential Temperature
##' \url{http://www.eol.ucar.edu/projects/ceop/dm/documents/refdata_report/eqns.html}
##' @title qair2rh
##' @param qair specific humidity, dimensionless (e.g. kg/kg) ratio of water mass / total air mass
##' @param temp degrees C
##' @param press pressure in mb
##' @return rh relative humidity, ratio of actual water mixing ratio to saturation mixing ratio
##' @export
##' @author David LeBauer
qair2rh <- function(qair, temp, press = 1013.25){
  es <- 6.112 * exp((17.67 * temp)/(temp + 243.5))
  e <- qair * press / (0.378 * qair + 0.622)
  rh <- e / es
  rh[rh > 1] <- 1
  rh[rh < 0] <- 0
  return(rh)
}
```

There is a simple formula to predict how much sunlight reaches the ground for different amounts of cloud cover (LARC, 2016):

$$P = 990 (1 - 0.75F^3) \text{ watts/m}^2$$

where F is the fraction of sky cloud cover on a scale from 0.0 (0% no clouds) to 1.0 (100% complete coverage).

A simpler calculation for an approximation of dew point temperature, if one knows the observed temperature and relative humidity, as proposed and reported by Lawrence (2005) and Bell (2016), respectively, is as follows:

$$T_d = T - ((100 - RH)/5.)$$

where T_d is dew point temperature (in degrees Celsius), T is observed temperature (in degrees Celsius), and RH is relative humidity (in percent). Apparently, this relationship is fairly accurate for relative humidity values above 50%.

REFERENCES

- EOL-UCAR. 2016. CEOP Derived Parameter Equations. Coordinated Energy and Water Cycle Observation Project (CEOP), Earth Observing Laboratory (EOL), University Corporation for Atmospheric Research (UCAR), Boulder, CO.
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EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 3-52				
						<input type="checkbox"/> Other <input type="checkbox"/> Amendment Number:				
Contract Number EP-C-12-021			Contract Period 09/26/2012 To 09/25/2016 Base Option Period Number 3			Title of Work Assignment/SF Site Name BASINS Support and Maintenance				
Contractor EASTERN RESEARCH GROUP, INC.					Specify Section and paragraph of Contract SOW See PWS					
Purpose: <input checked="" type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input checked="" type="checkbox"/> Work Plan Approval						Period of Performance From 05/19/2016 To 09/25/2016				
Comments:										
<input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund										
Note: To report additional accounting and appropriations data use EPA Form 1900-69A.										
SFO <input type="checkbox"/> (Max 2)										
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										
Authorized Work Assignment Ceiling										
Contract Period:		Cost/Fee: \$0.00		LOE: 0						
09/26/2012 To 09/25/2016										
This Action:		\$31,808.00		212						
Total:		\$31,808.00		212						
Work Plan / Cost Estimate Approvals										
Contractor WP Dated:		06/14/2016		Cost/Fee \$31,808.00		LOE: 212				
Cumulative Approved:				Cost/Fee \$31,808.00		LOE: 212				
Work Assignment Manager Name Stephen Kraemer						Branch/Mail Code:				
_____ (Signature) (Date)						Phone Number: 706-355-8340				
						FAX Number:				
Project Officer Name Meghan Hessenauer						Branch/Mail Code:				
_____ (Signature) (Date)						Phone Number: 202-566-1040				
						FAX Number:				
Other Agency Official Name						Branch/Mail Code:				
_____ (Signature) (Date)						Phone Number:				
						FAX Number:				
Contracting Official Name Brad Heath						Branch/Mail Code:				
_____ (Signature) (Date)						Phone Number: 513-487-2352				
						FAX Number:				

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 3-53				
						<input type="checkbox"/> Other <input type="checkbox"/> Amendment Number:				
Contract Number EP-C-12-021			Contract Period 09/26/2012 To 09/25/2016 Base Option Period Number 3			Title of Work Assignment/SF Site Name NPDES Vessel Reg Consideration				
Contractor EASTERN RESEARCH GROUP, INC.					Specify Section and paragraph of Contract SOW 4.0					
Purpose: <input checked="" type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input type="checkbox"/> Work Plan Approval						Period of Performance From 12/11/2015 To 09/25/2016				
Comments:										
<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund </div>										
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SFO (Max 2) <input type="checkbox"/>										
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09/26/2012 To 09/25/2016										
This Action:										
Total:										
Work Plan / Cost Estimate Approvals										
Contractor WP Dated:				Cost/Fee:			LOE:			
Cumulative Approved:				Cost/Fee:			LOE:			
Work Assignment Manager Name Jack Faulk <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number 202-564-0768 FAX Number:			
Project Officer Name Meghan Hessenauer <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: 202-566-1040 FAX Number:			
Other Agency Official Name <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: FAX Number:			
Contracting Official Name Brad Heath <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: 513-487-2352 FAX Number:			

**Performance Work Statement
Contract EP-C-12-021
Work Assignment 3-53**

Title: NPDES Vessel Regulatory Considerations

Work Assignment Contracting Officer's Representative (WACOR):

Jack Faulk
Office of Wastewater Management
OW/OWM/WPD/IB, 4203M
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460
Phone: (202) 564-0768
Fax: (202) 566-6392
E-mail: faulk.jack@epa.gov

Level of Effort Estimate: 2900 hours

Period of Performance: December 11, 2015 through September 25, 2016

Note: Notwithstanding any other statement in the PWS of this work assignment, the contractor shall not conduct any IT work, providing either services or equipment, until further written notification from the Contracting Officer is received.

General Work Assignment Requirements:

Confidential Business Information: The Contractor will, at all times, adhere to Confidential Business Information (CBI) procedures, including those requirements listed at 40 CFR Part 2, when handling industry information that the WACOR identifies as CBI. When noted as necessary by the WACOR, the Contractor will manage specified reports, documents, and other materials, as well as specified draft documents developed under this WA in accordance with the procedures set forth in its "Security Plan for Handling Confidential Business Information Under the Clean Water Act (CWA)," dated March 5, 2004 or its successor approved plans.

Identification as Contracting Staff: To avoid the perception that Contractor personnel are EPA employees, Contractor personnel shall be clearly identified as independent Contractors of EPA when participating in events with outside parties and visiting field sites. When speaking with the public the Contractor should refer all interpretations of policy to the WACOR.

Limitation of Contractor Activities: The Contractor shall submit drafts of all deliverables to the WACOR for review. The Contractor shall incorporate all WACOR comments into the final deliverables, unless otherwise agreed upon by the WACOR. The Contractor shall adhere to all applicable EPA management control procedures as implemented by the Contracting Officer (CO), Contract Level Contracting Officer's Representative (CL-COR) and WACOR.

Compliance with Section 508 Requirements: Section 508 of the Rehabilitation Act mandates that all Federal departments and agencies make electronic and information technology accessible to individuals with disabilities. This includes all individuals with disabilities wishing to access Federal information. EPA is committed to making every possible effort to ensure that all electronic and information technology developed, procured, maintained, or used by EPA is accessible to all persons with disabilities. Consequently, according to the contract clause “EPAAR 1552.2119-79: Compliance with EPA Policies for Information Resources Management,” all deliverables submitted by the Contractor shall be compliant with the Section 508 requirements.

Travel: When travel outside of the local area becomes necessary in support of this WA, a travel authorization must be submitted to and approved by the WACOR and the CL-COR prior to the travel taking place. All travel shall be in accordance with FAR 31.205-46.

Draft and Deliverable format: All memos, draft comments, summaries and responses are to be provided electronically in Microsoft Word and/or Excel. The Contractor shall clearly specify the methods, procedures, considerations, assumptions, relevant citations, data sources and data that support their conclusions. EPA will review all outputs in draft form, and the Contractor shall incorporate the changes specified by EPA prior to providing a final version. All final materials, e.g., memos, tables, spreadsheets, etc. are to be prepared only after incorporating comments on draft documents provided by the WACOR.

Meetings and Conferences: No single event under this Work Assignment is anticipated to exceed \$20,000. The Contractor shall immediately notify the CO, CL-COR and WACOR of any anticipated event involving support for a meeting, conference, workshop, symposium, retreat, seminar or training that may potentially incur \$20,000 or more in cost during performance. Conference expenses are all direct and indirect costs paid by the government and include any associated authorized travel and per diem expenses, room charges for official business, audiovisual use, light refreshments, registration fees, ground transportation and other expenses as defined by the Federal Travel Regulations. All outlays for conference preparation should be included, but the federal employee time for conference preparation should not be included. After notifying EPA of the potential to reach this threshold, the Contractor shall not proceed with the task(s) until authorized to do so by the CO.

Task 1: Project Management

The Contractor shall prepare a work plan for all phases of the work assignment within 30 calendar days of receipt of WA. The work plan shall present the technical approach by task; the project schedule and deliverables; staffing details; level of effort by task, staff member, and professional labor mix; and the estimated budget.

The Contractor shall provide electronic copies of the monthly progress reports to the CO, CL-COR and WACOR. Each progress report shall describe the technical work and expenditures for the same time period as the corresponding invoice. The reports shall list by task the amount of work completed and include a table of hours by personnel for each task. The reports also shall

identify any problems or difficulties. Quarterly, the reports shall include a QA section that summarizes QA steps taken in the performance of work during the reporting period.

The Contractor shall submit an email that proposes a standardized naming convention and version control for all deliverables associated with the WA. This system will ensure that deliverables are clearly named and dated and that the sequence of versions of a document is clear. The WACOR will review the email and then provide the contractor with written notification of approval or edits that need to be made. After receiving notification of approval the contractor shall use this standardized convention for all deliverables associated with the work assignment(s).

The Contractor shall immediately notify the WACOR by telephone of any problems that may impede performance, along with any corrective actions needed to solve the problems.

Task 1 - Deliverables:

1.1 - Work plan and budget: Within 30 days of receipt of work assignment

1.2 – Progress/budget reports: Included in the Monthly Technical and Cost Progress Report

1.3 - Problem report: Contractor shall notify the WACOR immediately upon discovery of a problem.

Task 2: Quality Assurance

Quality Assurance Project Plans are required under the Agency's Quality Assurance Policy CIO-2105, formerly EPA Order 5360.1A2 and implementing guidance CIO-2105-P-01-0. All projects that involve the generation, collection, analysis and use of environmental data must have an approved QAPP to assure the quality, objectivity, integrity and utility of the data and information used in the project.

QA Project Plan Requirements

EPA policy requires that an approved Quality Assurance Project Plan (QAPP) or Programmatic Quality Assurance Project Plan (PQAPP) be in place for work that involves the collection, generation, evaluation, analysis or use of primary environmental data. The QAPP or PQAPP defines and documents how specific data generation and collection activities shall be planned, implemented, and assessed during a particular project. This contract has an approved PQAPP for all necessary work envisioned under this work assignment.

ERG shall adhere to the approved PQAPP when generating, collecting and determining the use of data and information for any applicable task under this work assignment. Specifically, Sections 3 and 4 of the ERG PQAPP apply to the collection and analysis of secondary (existing) data under this work assignment. Sections 7-10 and section 12 are also applicable to this work assignment. If any work required under this work assignment is not covered under the PQAPP, then ERG shall prepare a Supplemental QAPP (SQAPP) for those tasks.

Deliverables and schedule under Task 2

TASK 2 – DELIVERABLES	
Deliverable	Deadline
SQAPP	10 days after notification by the WACOR that an SQAPP is needed
Revisions based on EPA feedback	7 days after receipt of WACOR feedback
Final SQAPP for this Work Assignment	5 days after WACOR feedback
PQAPP/SQAPP progress reports	Monthly

Task 3: Evaluate options for managing ballast water for small vessels, focused on options for vessels entering and traversing the Great Lakes

Inland and Seagoing Vessels less than 1600 gross registered tons (3000 gross tons) are not required to meet the numeric treatment limits in Section 2.2.3.5 of the Final VGP. An inland vessel means a vessel that operates exclusively on inland waters. EPA encouraged vessels in this size class to use alternate measures to reduce the number of living organisms in their ballast water discharges, including use of those measures found in Part 2.2.3.5 of the VGP and use of onboard potable water generators. However, EPA did not feel comfortable mandating these requirements because the Agency did not have sufficient information about the availability and efficacy of these management approaches for these vessels. EPA concluded that, though technologies are promising for future development, they did not support the conclusion that numeric ballast water treatment limits for small inland and seagoing vessels represents BAT at this time or over the life of the permit. For example, most ballast water treatment systems have been designed for larger vessels and/or vessels which only uptake or discharge ballast water on either end of longer voyages and the record at proposal contained no evidence that any vessels smaller than 1600 GRT had successfully installed a treatment systems on their vessel. Supplemental analysis by the Agency confirmed the conclusion that the ballast water numeric limits did not reflect BAT for this class of vessels.

Some smaller vessels, because of their unique designs and operations might be able to use onboard potable water for ballasting. This is particularly true for vessels that use ballast to compensate for fuel burn-off and sewage generation. Protecting the Great Lakes from the introduction of new invasive species is one of the priorities of EPA and the Federal Government and potential applications of this technology to that end is also a goal of this task. Under a previous work assignment, the Contractor developed a report (Feasibility and Efficacy of Using Potable Water Generators as an Alternative Option for Meeting Ballast Discharge Limits, EPA 830-R-15-002, July, 2015) evaluating whether such systems can be used as an effective form of ballast water management for these vessels, and if so, whether they are environmentally effective.

The contractor shall support EPA's dissemination of the findings of this report as a way to further gauge the feasibility of implementing such technologies for the control of ballast water discharges through outreach such as journal articles, fact sheet, etc. In addition, the contractor

shall provide an accountability report about how and whether this report has furthered EPA's goals toward protecting the Great Lakes from invasive species (e.g., a short description of how funds were used for Task 3 activities for both this contract option period and previous contract option periods, how much was spent on each subtask, and why the work is directly relevant to the goal of preventing the introduction of new invasive species to the Great Lakes and slowing their dispersal pathways in those water bodies). Finally, under this task, the contractor shall provide any updates to the report as requested by the WACOR.

Task 3 - Deliverables:

Deliverable	Deadline
Journal articles, as requested by WACOR	According to a schedule developed by ERG and approved by the WACOR
Fact Sheet and other outreach materials	<ul style="list-style-type: none"> - Draft within 30 days of WACOR request - Revisions within 10 days after receipt of comments from WACOR
Great Lakes Accountability/Relevance Report	30 days after WACOR request

Task 4: Evaluate Laker Best Management Practice Efficacy

In the 2013 VGP, EPA included several best management practices (BMPs) for Lakers to reduce the likelihood of those vessels dispersing and spreading aquatic invasive species. Protecting the Great Lakes from the introduction and spread of invasive species is one of the priorities of EPA and the Federal Government. This task is designed to better estimate the efficacy of those mandatory management measures. Under previous contract option periods for Task 4, the Contractor produced two reports to assess this: "Sampling Report: Simulated Ballast Water Intake Characterization Study for High and Low Suction Sea Chests on Lakers" EPA 830-R-15-001, April 2015, and "Sampling Report for the Vessel General Permitting Program Pump Mortality Study" EPA 830-R-15-003, April 2015.

In addition, in the previous contract period the contractor prepared a draft report entitled: "Analysis of Ballast Water Discharges into the Great Lakes from Overseas Vessels from 2010 to 2013" which provides information on ballast water discharges from ocean-going vessels entering the Great Lakes. Information in that report will be useful to assess aquatic nuisance species invasion risks into the Great Lakes by these vessels. Under this Task, the contractor will prepare the final report based on any final comments from EPA and selected stakeholders (i.e., the two agencies that provided data for the study, Transport Canada and the Smithsonian Environmental Research Center).

The inter-lake transfer of ballast water, and aquatic nuisance species potentially also transferred, is another important aspect to consider when identifying approaches to control these invasions. Following up on the report identified above, under Task 4, the contractor will perform an assessment of the availability of data on the movement of vessels within the Great Lakes and the associated uptake and discharge of ballast water. Based on the availability of data, the contractor will prepare a report that compiles these data and presents them in such a way as to characterize these ballast water management activities which can be used as a way to analyze invasion risks from inter-lake transfers.

In addition, the contractor shall provide an accountability report about how and whether the activities/reports in Task 4 has furthered EPA's goals toward protecting the Great Lakes from invasive species (e.g., a short description of how funds were used for Task 4 activities for both this and previous contract periods, how much was spent on each subtask, and why the work is directly relevant to the goal of preventing the introduction of new invasive species to the Great Lakes and slowing their dispersal pathways in those water bodies).

Task 4 - Deliverables:

Deliverable	Deadline
Finalize Overseas Vessels Ballast Water Report	<ul style="list-style-type: none"> - Final report within 30 days of WACOR request. - Report edits due within 10 business days of WACOR request, unless otherwise noted
Results of ballast water data availability assessment for Great Lakes inter-lake transfers	<ul style="list-style-type: none"> - Draft within 60 days of WACOR request - Revisions within 10 days after receipt of comments from WACOR
Great Lakes Inter-Lake Transfer Report	According to a schedule developed by ERG and approved by the WACOR
Great Lakes Accountability/Relevance Report	30 days after WACOR request

Task 5: Provide Technical and Implementation Support to EPA's Vessel General Permitting Program (including for the VGP and sVGP)

The Contractor shall support EPA's development of technical and factual materials for EPA use in implementing its Vessel General Permitting Program, including work for developing the factual information for the next VGP and sVGP as appropriate. This support will primarily be focused around developing background information and effluent limits for those permits, but may also include conducting research for other vessel related discharge issues.

The contractor shall refine as needed literature reviews, develop background materials, research technologies, and work with industry experts and government officials to develop a solid foundation for instituting national permit limits. The contractor may be asked to update existing technical development documents (TDDs) and produce or finalize 0-3 additional TDDs. After reviewing these sources of information, the contractor shall prepare and/or finalize 10 – 30 page technical memoranda (plus appendices with relevant data) describing the sources of information, key findings from those sources, technological capabilities and efficacy, cost information where relevant, and what conclusions, if any, can be drawn from this information. Once final, these TDDs shall be of sufficient quality to place in the docket and serve as part of the administrative record for decision making. Subject areas which may be researched include, but will not be limited to:

1. Advances in anti-foulant hull coating technologies/and pollution and invasive species control options
2. Advances in ballast water treatment system technology development
3. Evaluations of information submitted as part of EPA's monitoring requirements
4. Monitoring approaches to assess vessel discharges

5. Status on the availability and technical feasibility of using environmental acceptable lubricants on vessels, including the extent to which vessels have converted to these applications as a result of VGP/sVGP requirements.
6. Other discharge types and treatment options as necessary.

In addition, upon receiving written direction from the WACOR, the contractor shall assist EPA in the issuance/modification of the VGP or sVGP. For example, EPA routinely evaluates the appropriateness of the current VGP permit limits and that permit is currently being challenged in federal court. This action could include assembling key background information, providing docket support, and assisting in preparation of briefing materials. Additionally, EPA expects to begin work on developing the next draft of that permit (scheduled to be reissued in 2018). Contractor support for permit development may include activities such as an assessment of existing permit requirements; preparation of technical memoranda, background information, and briefing materials; and docket compilation.

Task 5 - Deliverables:

Deliverable	Deadline
Technical Development Document Outline	Draft within 30 days of technical direction from WACOR and any revisions within 10 days of receipt of comments from WACOR
Technical Development Document	Draft within 60 days of EPA approval of final TDD outline and any revisions within 10 days of receipt of comments from WACOR
Briefing Materials	Based on technical direction from the WACOR
Targeted Assessment of Permit Conditions	Based on technical direction from the WACOR
Technical Memorandum and Background Information	Based on technical direction from the WACOR
Docket Support	Based on technical direction from the WACOR

Task 6: Provide Technical Support Implementing EPA's Obligations as a Result of the Successful Endangered Species Act (ESA) Consultation for the sVGP and the VGP

On November 28 and 29, 2012, EPA successfully concluded formal consultation with NOAA Fisheries and the Fish and Wildlife Service (i.e., the Services) on the VGP and sVGP. As a result of that consultation, EPA agreed to some follow-up implementation activities as described in the Services Biological Opinion recommendations. These activities include preparing a monitoring plan, periodically analyzing and compiling data on vessel discharges as identified in that plan, and periodically reviewing whether there have been new aquatic nuisance species introductions into U.S. waters.

EPA, in consultation with the Services, developed the monitoring plan (with the current working version dated December 2014) for how to approach the analyses of the vessel discharge data. The contractor may be asked to support modification or finalization of that plan to better characterize vessel discharges and activities that may affect listed species and/or critical habitat. Also, the contractor shall support analyzing vessel data, specified invasive species databases, and other data sources as applicable to provide information to the EPA consistent with the latest version of the monitoring plan.

Task 6 - Deliverables:

Deliverable	Deadline
Revise/Finalize Endangered Species Monitoring Plan	Draft within 60 days of technical direction from WACOR and any revisions within 15 days of receipt of comments from WACOR
Endangered Species Monitoring Data Analysis Report	Based on technical direction from the WACOR
Aquatic Nuisance Species Assessment Report	Based on technical direction from the WACOR

Task 7: Ballast Water Treatment System Sensor Inventory and “Next Generation” Ballast Water Monitoring

The VGP requires that vessel operators conduct monitoring when they use ballast water treatment systems to meet the requirements of the VGP. Most of the requirements, contained within functional monitoring, will be conducted using probes and other sensors. Additionally, there are several promising approaches for biological monitoring for future iterations of the VGP (e.g., see King and Tamburri, 2010 and Drake et al., 2014). EPA needs to better understand existing research and the status of prototype development of these systems as well as to examine current challenges faced in performing monitoring of vessel discharges.

Under the previous contract period, the contractor prepared a draft report that provides an inventory of sensors and probes on existing ballast water treatment systems having received U.S. Coast Guard Alternate Management System (AMS) determinations. The draft report identifies the types of sensors commonly employed on different types of treatment systems and the appropriateness of the parameters monitored. Under Task 7, the contractor will provide a revised report based on comments from the WACOR on the draft report.

7A 1.0 – Within 21 days of receiving technical direction from the WACOR, the contractor shall submit an annotated outline, including a list of all systems having received USCG AMS and type approval and an introductory description of how the contractor intends to collect and analyze more detailed data.

7A 2.0 – Within 60 days of receiving technical direction from the WACOR, the contractor shall submit a draft report to EPA which contains details on each system. The contractor shall also make underlying data available to EPA in database format.

The contractor shall summarize the state of “next generation” ballast water monitoring approaches that might potentially be used for future iterations or revisions of the VGP (e.g., fluorescence as an indicator of gross non-compliance for autotrophs, see Drake et al. 2014). This work shall include referencing and summarizing the existing state of the science, summarizing existing commercially available probes (e.g., Hach; turner scientific) and the validation work they have undergone to date, and identifying key needs to make using these tools feasible in self-monitoring applications.

Task 7 - Deliverables:

Deliverable	Deadline
BWTS Sensor Inventory Report	Revised draft within 60 days of technical direction from WACOR and any revisions within 15 days of receipt of comments from WACOR

Next Generation Monitoring Inventory Outline	Within 30 days of technical direction from WACOR
Next Generation Monitoring Report	Draft and revision reports based on technical direction from the WACOR

Task 8: Support Implementation of the VGP and sVGP and other Vessel Program Outreach

The Contractor shall support EPA with the development of materials for implementation and outreach of the VGP and sVGP. Additionally, the Contractor shall support EPA's development of outreach materials and efforts in support of its vessel program. Contractor shall prepare technical materials such as 1-2 page factsheets and power point presentations on permit conditions, internal as well as external stakeholder meetings, or briefings for senior management. Contractor shall assume up to 10 short implementation fact sheets and implementation check lists. Some of those fact sheets may need to be translated into languages of the IMO (French, Spanish, Chinese, Russian, and/or Arabic). The contractor shall also support 0-5 online meetings and webinars as requested by the WACOR.

Task 8 - Deliverables:

Deliverable	Deadline
Briefing Materials	Based on technical direction from the WACOR
Online Meeting/Webinar Support	<ul style="list-style-type: none"> - Registration pages within 1 week after technical direction from WACOR. - Summary reports within 2 weeks after completion of meeting/webinar.
Technical Memorandum and Background Information	Based on technical direction from the WACOR
Brochures, Fact Sheets	Based on technical direction from the WACOR
Other Outreach Materials	Based on technical direction from the WACOR

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09/26/2012 To 09/25/2016									
This Action:		\$289,252.00		2,900					
Total:		\$289,252.00		2,900					
Work Plan / Cost Estimate Approvals									
Contractor WP Dated: 01/08/2016		Cost/Fee \$289,252.00		LOE: 2,900					
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Project Officer Name Meghan Hessenauer <div style="display: flex; justify-content: space-between; border-top: 1px solid black; margin-top: 10px;"> (Signature) (Date) </div>						Branch/Mail Code:			
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EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 3-53				
						<input type="checkbox"/> Other <input checked="" type="checkbox"/> Amendment Number: 000001				
Contract Number EP-C-12-021			Contract Period 09/26/2012 To 09/25/2016			Title of Work Assignment/SF Site Name				
			Base Option Period Number 3			NPDES Vessel Reg Consideration				
Contractor EASTERN RESEARCH GROUP, INC.					Specify Section and paragraph of Contract SOW 4.0					
Purpose: <input type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input checked="" type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input type="checkbox"/> Work Plan Approval					Period of Performance From 03/30/2016 To 09/25/2016					
Comments:										
<input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund										
SFO <input type="checkbox"/> (Max 2) Note: To report additional accounting and appropriations date use EPA Form 1900-69A.										
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										
Authorized Work Assignment Ceiling										
Contract Period:		Cost/Fee:			LOE:					
09/26/2012 To 09/25/2016										
This Action:										
Total:										
Work Plan / Cost Estimate Approvals										
Contractor WP Dated:					Cost/Fee			LOE:		
Cumulative Approved:					Cost/Fee			LOE:		
Work Assignment Manager Name Jack Faulk							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number: 202-564-0768			
							FAX Number:			
Project Officer Name Meghan Hessenauer							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number: 202-566-1040			
							FAX Number:			
Other Agency Official Name							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number:			
							FAX Number:			
Contracting Official Name Brad Heath							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number: 513-487-2352			
							FAX Number:			

**Performance Work Statement
Contract EP-C-12-021
Work Assignment 3-53
Amendment 1**

Title: NPDES Vessel Regulatory Considerations

Work Assignment Contracting Officer's Representative (WACOR):

Jack Faulk
Office of Wastewater Management
OW/OWM/WPD/IB, 4203M
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460
Tel: (202) 564-0768
Fax: (202) 566-6392
E-mail: faulk.jack@epa.gov

Level of Effort Estimate: 12,000 hours

Period of Performance: March 30, 2016 through September 25, 2016

Note: Notwithstanding any other statement in the PWS of this work assignment, the contractor shall not conduct any IT work, providing either services or equipment, until further written notification from the Contracting Officer is received.

General Work Assignment Requirements:

Confidential Business Information: The Contractor will, at all times, adhere to Confidential Business Information (CBI) procedures, including those requirements listed at 40 CFR Part 2, when handling industry information that the WACOR identifies as CBI. When noted as necessary by the WACOR, the Contractor will manage specified reports, documents, and other materials, as well as specified draft documents developed under this WA in accordance with the procedures set forth in its "Security Plan for Handling Confidential Business Information Under the Clean Water Act (CWA)," dated March 5, 2004 or its successor approved plans.

Identification as Contracting Staff: To avoid the perception that Contractor personnel are EPA employees, Contractor personnel shall be clearly identified as independent Contractors of EPA when participating in events with outside parties and visiting field sites. When speaking with the public the Contractor should refer all interpretations of policy to the WACOR.

Limitation of Contractor Activities: The Contractor shall submit drafts of all deliverables to the WACOR for review. The Contractor shall incorporate all WACOR comments into

the final deliverables, unless otherwise agreed upon by the WACOR. The Contractor shall adhere to all applicable EPA management control procedures as implemented by Contracting Officer (CO), Contract Level Contracting Officer's Representative (CL-COR), and WACOR.

Compliance with Section 508 Requirements: Section 508 of the Rehabilitation Act mandates that all Federal departments and agencies make electronic and information technology accessible to individuals with disabilities. This includes all individuals with disabilities wishing to access Federal information. EPA is committed to making every possible effort to ensure that all electronic and information technology developed, procured, maintained, or used by EPA is accessible to all persons with disabilities. Consequently, according to the contract clause "EPAAR 1552.2119-79: Compliance with EPA Policies for Information Resources Management," all deliverables submitted by the Contractor shall be compliant with the Section 508 requirements.

Travel: When travel outside of the local area becomes necessary in support of this WA, a travel authorization must be submitted to and approved by the WACOR and the CL-COR prior to the travel taking place. All travel shall be in accordance with FAR 31.205-46.

Draft and Deliverable format: All memos, draft comments, summaries and responses are to be provided electronically in Microsoft Word and/or Excel. The Contractor shall clearly specify the methods, procedures, considerations, assumptions, relevant citations, data sources and data that support their conclusions. EPA will review all outputs in draft form, and the Contractor shall incorporate the changes specified by EPA prior to providing a final version. All final materials, e.g., memos, tables, spreadsheets, etc. are to be prepared only after incorporating comments on draft documents provided by the WACOR.

Meetings and Conferences: No single event under this Work Assignment is anticipated to exceed \$20,000. The Contractor shall immediately notify the CO, CL-COR, and WACOR of any anticipated event involving support for a meeting, conference, workshop, symposium, retreat, seminar or training that may potentially incur \$20,000 or more in cost during performance. Conference expenses are all direct and indirect costs paid by the government and include any associated authorized travel and per diem expenses, room charges for official business, audiovisual use, light refreshments, registration fees, ground transportation and other expenses as defined by the Federal Travel Regulations. All outlays for conference preparation should be included, but the federal employee time for conference preparation should not be included. After notifying EPA of the potential to reach this threshold, the Contractor shall not proceed with the task(s) until authorized to do so by the CO.

Task 1: Project Management

The Contractor shall prepare a work plan for all phases of the work assignment within 30 calendar days of receipt of WA. The work plan shall present the technical approach by

task; the project schedule and deliverables; staffing details; level of effort by task, staff member, and professional labor mix; and the estimated budget.

The Contractor shall provide electronic copies of the monthly progress reports to the EPA Project Officer (PO), WACOR, and alternate WACOR. Each progress report shall describe the technical work and expenditures for the same time period as the corresponding invoice. The reports shall list by task the amount of work completed and include a table of hours by personnel for each task. The reports also shall identify any problems or difficulties. Quarterly, the reports shall include a QA section that summarizes QA steps taken in the performance of work during the reporting period.

The Contractor shall submit an email that proposes a standardized naming convention and version control for all deliverables associated with the WA. This system will ensure that deliverables are clearly named and dated and that the sequence of versions of a document is clear. The WACOR will review the email and then provide the contractor with written notification of approval or edits that need to be made. After receiving notification of approval the contractor shall use this standardized convention for all deliverables associated with the work assignment(s).

The Contractor shall immediately notify the WACOR by telephone of any problems that may impede performance, along with any corrective actions needed to solve the problems.

Task 1 - Deliverables:

1.1 - Work plan and budget: Within 30 days of receipt of work assignment

1.2 – Progress/budget reports: Included in the Monthly Technical and Cost Progress Report

1.3 - Problem report: Contractor shall notify the WACOR immediately upon discovery of a problem.

Task 2: Quality Assurance

Quality Assurance Project Plans are required under the Agency's Quality Assurance Policy CIO-2105, formerly EPA Order 5360.1A2 and implementing guidance CIO-2105-P-01-0. All projects that involve the generation, collection, analysis and use of environmental data must have an approved QAPP to assure the quality, objectivity, integrity and utility of the data and information used in the project.

QA Project Plan Requirements

EPA policy requires that an approved Quality Assurance Project Plan (QAPP) or Programmatic Quality Assurance Project Plan (PQAPP) be in place for work that

involves the collection, generation, evaluation, analysis or use of primary environmental data. The QAPP or PQAPP defines and documents how specific data generation and collection activities shall be planned, implemented, and assessed during a particular project. This contract has an approved PQAPP for all necessary work envisioned under this work assignment.

ERG shall adhere to the approved PQAPP when generating, collecting and determining the use of data and information for any applicable task under this work assignment. Specifically, Sections 3 and 4 of the ERG PQAPP apply to the collection and analysis of secondary (existing) data under this work assignment. Sections 7-10 and section 12 are also applicable to this work assignment. If any work required under this work assignment is not covered under the PQAPP, then ERG shall prepare a Supplemental QAPP (SQAPP) for those tasks.

Deliverables and schedule under Task 2

TASK 2 – DELIVERABLES	
Deliverable	Deadline
SQAPP	10 days after notification by the WACOR that an SQAPP is needed
Revisions based on EPA feedback	7 days after receipt of WACOR feedback
Final SQAPP for this Work Assignment	5 days after WACOR feedback
PQAPP/SQAPP progress reports	Monthly

Task 3: Evaluate options for managing ballast water for vessels, including options for vessels entering and traversing the Great Lakes

Managing the discharge of ballast water is a critical component of aquatic nuisance species control. This task includes preparation of a document assessing the state of ballast water management systems for vessels that could transit into freshwater ecosystems, including options available for both existing and new vessels. This assessment will investigate the full range of ballast water management system (BWMS) options, including activities such as best management practices, ballast water exchange, and treatment. Both on-ship and off-ship (e.g., on-shore) ballast water treatment systems options will be considered for the full range of domestic and international vessels covered under EPA's Vessel General Permit (VGP) as well as vessels less than 79 feet in length that may otherwise be covered under EPA's Small Vessel General Permit (sVGP). The report will provide BWMS options for both inland and marine vessels, including vessel activities in the Great Lakes (i.e., pre- and post-2009 Lakers and other vessels traversing the Great Lakes).

The assessment will consider biological effectiveness, cost, logistics, operations, regulatory implications, safety, and any other areas that may affect ballast water management, including challenges presented by freshwater ecosystems. The assessment

will look at both shipboard treatment and off-ship reception facilities to determine the availability and economic and logistical feasibility of these two options for the treatment of ballast water from the different categories/classes of vessels. Specifically, this assessment will consider if onshore treatment or other off-ship treatment, such as on a treatment barge, are reasonable, or preferred, alternatives to shipboard treatment for any universe of vessels covered under the VGP, including an assessment of the time necessary to implement such an approach if such is found to be a reasonable alternative. Unique characteristics of classes/categories of vessels will be considered in context with BWMS options to determine whether specific management/treatment options are “available” for these vessels considering the unique operational and design constraints of such vessels (e.g., large volumes of fresh cold water required and the short duration of trips for Lakers). This assessment will also evaluate Lakers built after 2009 since these vessels face many of the same challenges and constraints as pre-2009 Lakers. As appropriate, this assessment will evaluate a variety of environmental (e.g., temperature and salinity), operational (e.g., ballasting flow rates and holding times), and vessel design (e.g., ballast volume and unmanned barges) parameters to consider in determining applicable discharge requirements.

Some smaller vessels, because of their unique designs and operations might be able to use onboard potable water for ballasting. This is particularly true for vessels that use ballast to compensate for fuel burn-off and sewage generation. Protecting the Great Lakes from the introduction of new invasive species is one of the priorities of EPA and the Federal Government and potential applications of this technology to that end is also a goal of this task. Under a previous work assignment, the Contractor developed a report (Feasibility and Efficacy of Using Potable Water Generators as an Alternative Option for Meeting Ballast Discharge Limits, EPA 830-R-15-002, July, 2015) evaluating whether such systems can be used as an effective form of ballast water management for these vessels, and if so, whether they are environmentally effective.

The contractor shall support EPA’s dissemination of the findings of this report as a way to further gauge the feasibility of implementing such technologies for the control of ballast water discharges through outreach such as journal articles, fact sheet, etc. In addition, the contractor shall provide an accountability report about how and whether this report has furthered EPA’s goals toward protecting the Great Lakes from invasive species (e.g., a short description of how funds were used for Task 3 activities for both this contract option period and previous contract option periods, how much was spent on each subtask, and why the work is directly relevant to the goal of preventing the introduction of new invasive species to the Great Lakes and slowing their dispersal pathways in those water bodies). Finally, under this task, the contractor shall provide any updates to the report as requested by the WACOR.

Task 3 - Deliverables:

Deliverable	Deadline
Journal articles, as requested by WACOR	According to a schedule developed by ERG and approved by the WACOR
Fact Sheet and other outreach materials	- Draft within 30 days of WACOR request

	- Revisions within 10 days after receipt of comments from WACOR
BWTS Technical Development Document Outline	- Draft within 30 days of WACOR request - Revisions within 10 days after receipt of comments from WACOR
Preliminary BWTS Technical Development Document	- Draft – March 31, 2017 - Revisions within 1 month after receipt of comments from WACOR unless specified otherwise
Great Lakes Accountability/Relevance Report	30 days after WACOR request

Task 4: Evaluate Vessel Best Management Practice Efficacy

In the 2013 VGP, EPA included several best management practices (BMPs) for Lakers to reduce the likelihood of those vessels dispersing and spreading aquatic invasive species. Protecting the Great Lakes from the introduction and spread of invasive species is one of the priorities of EPA and the Federal Government. This task is designed to better estimate the efficacy of those mandatory management measures. Under previous contract option periods for Task 4, the Contractor produced two reports to assess this: “Sampling Report: Simulated Ballast Water Intake Characterization Study for High and Low Suction Sea Chests on Lakers” EPA 830-R-15-001, April 2015, and “Sampling Report for the Vessel General Permitting Program Pump Mortality Study” EPA 830-R-15-003, April 2015.

In addition, in the previous contract period the contractor prepared a draft report entitled: “Analysis of Ballast Water Discharges into the Great Lakes from Overseas Vessels from 2010 to 2013” which provides information on ballast water discharges from ocean-going vessels entering the Great Lakes. Information in that report will be useful to assess aquatic nuisance species invasion risks into the Great Lakes by these vessels. Under this Task, the contractor will prepare the final report based on any final comments from EPA and selected stakeholders (i.e., the two agencies that provided data for the study, Transport Canada and the Smithsonian Environmental Research Center).

The inter-lake transfer of ballast water, and aquatic nuisance species potentially also transferred, is another important aspect to consider when identifying approaches to control these invasions. Following up on the report identified above, under Task 4, the contractor will perform an assessment of the availability of data on the movement of vessels within the Great Lakes and the associated uptake and discharge of ballast water. Based on the availability of data, the contractor will prepare a report that compiles these data and presents them in such a way as to characterize these ballast water management activities which can be used as a way to analyze invasion risks from inter-lake transfers.

The first phase of the inter-lake transfer analysis is a data gathering phase that will culminate in a report summarizing vessel routes entering the Great Lakes Basin, as well as routes within the lakes, including vessel type (e.g., commercial, recreational) and possible vectors (e.g., hull fouling, ballast water, recreational boat trailer). The report will also include information on the ranges and populations of ANS currently inhabiting the

Great Lakes. The report will aim to identify the highest risk routes and vessels/vector combinations.

Data and maps reflecting the routes of vessels into and within the Great Lakes (e.g. transoceanic vessels) will be provided, including information for Lakers, tugs, and recreational vessels, where possible. The report will also include data regarding the populations, ranges, and environmental characteristics of these ranges (salinity, temperature, etc.) of existing ANS in the Great Lakes. The final report will describe how inter-lake transfer may occur and the routes/vessels/vectors that pose the highest risk for spreading existing ANS, or future ANS that may enter the Great Lakes.

Potential follow-up work will include using information identified in this report to develop a suite of strategies or tools to address inter-lake transfer of ANS.

In addition, the contractor shall provide an accountability report about how and whether the activities/reports in Task 4 has furthered EPA's goals toward protecting the Great Lakes from invasive species (e.g., a short description of how funds were used for Task 4 activities for both this and previous contract periods, how much was spent on each subtask, and why the work is directly relevant to the goal of preventing the introduction of new invasive species to the Great Lakes and slowing their dispersal pathways in those water bodies).

Task 4 - Deliverables:

Deliverable	Deadline
Finalize Overseas Vessels Ballast Water Report	<ul style="list-style-type: none">- Final report within 30 days of WACOR request.- Report edits due within 10 business days of WACOR request, unless otherwise noted
Great Lakes Inter-Lake Transfer Report Outline, including results of data availability assessment	<ul style="list-style-type: none">- Draft within 60 days of WACOR request- Revisions within 10 days after receipt of comments from WACOR
Phase I Great Lakes Inter-Lake Transfer Report	<ul style="list-style-type: none">- Draft report within 4 months after EPA acceptance of final outline- Revisions within 1 month after receipt of comments from WACOR
Follow-up Great Lakes Inter-Lake Transfer Report	As specified in technical direction from the WACOR based on findings from Phase I Report
Great Lakes Accountability/Relevance Report	30 days after WACOR request

Task 5: Provide Technical and Implementation Support to EPA's Vessel General Permitting Program (including for the VGP and sVGP)

The Contractor shall support EPA's development of technical and factual materials for EPA use in implementing its Vessel General Permitting Program, including work for developing the factual information for the next VGP and sVGP as appropriate. This support will primarily be focused around developing background information and effluent limits for those permits, but may also include conducting research for other vessel related discharge issues.

The contractor shall refine as needed literature reviews, develop background materials, research technologies, and work with industry experts and government officials to develop a solid foundation for instituting national permit limits. The contractor may be asked to update existing technical development documents (TDDs) and produce or finalize 0-3 additional TDDs. After reviewing these sources of information, the contractor shall prepare and/or finalize 10 – 30 page technical memoranda (plus appendices with relevant data) describing the sources of information, key findings from those sources, technological capabilities and efficacy, cost information where relevant, and what conclusions, if any, can be drawn from this information. Once final, these TDDs shall be of sufficient quality to place in the docket and serve as part of the administrative record for decision making. Subject areas which may be researched include, but will not be limited to:

1. Advances in anti-foulant hull coating technologies/and pollution and invasive species control options
2. Advances in ballast water treatment system technology development
3. Evaluations of information submitted as part of EPA's monitoring requirements
4. Monitoring approaches to assess vessel discharges
5. Status on the availability and technical feasibility of using environmental acceptable lubricants on vessels, including the extent to which vessels have converted to these applications as a result of VGP/sVGP requirements.
6. Other discharge types and treatment options as necessary.

In addition, upon receiving written direction from the WACOR, the contractor shall assist EPA in the issuance/modification of the VGP or sVGP. For example, EPA routinely evaluates the appropriateness of the current VGP permit limits and that permit is currently being challenged in federal court. This action could include assembling key background information, providing docket support, and assisting in preparation of briefing materials. Additionally, EPA expects to begin work on developing the next draft of that permit (scheduled to be reissued in 2018). Contractor support for permit development may include activities such as an assessment of existing permit requirements; preparation of technical memoranda, background information, and briefing materials; and docket compilation.

Task 5 - Deliverables:

Deliverable	Deadline
Technical Development Document Outline	Draft within 30 days of technical direction from WACOR and any revisions within 10 days of receipt of comments from WACOR
Technical Development Document	Draft within 60 days of EPA approval of final TDD outline and any revisions within 10 days of receipt of comments from WACOR
Briefing Materials	Based on technical direction from the WACOR
Targeted Assessment of Permit Conditions	Based on technical direction from the WACOR
Technical Memorandum and Background Information	Based on technical direction from the WACOR

Docket Support	Based on technical direction from the WACOR
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Task 6: Provide Technical Support Implementing EPA’s Obligations as a Result of the Successful Endangered Species Act (ESA) Consultation for the sVGP and the VGP

On November 28 and 29, 2012, EPA successfully concluded formal consultation with NOAA Fisheries and the Fish and Wildlife Service (i.e., the Services) on the VGP and sVGP. As a result of that consultation, EPA agreed to some follow-up implementation activities as described in the Services Biological Opinion recommendations. These activities include preparing a monitoring plan, periodically analyzing and compiling data on vessel discharges as identified in that plan, and periodically reviewing whether there have been new aquatic nuisance species introductions into U.S. waters.

EPA, in consultation with the Services, developed the monitoring plan (with the current working version dated December 2014) for how to approach the analyses of the vessel discharge data. The contractor may be asked to support modification or finalization of that plan to better characterize vessel discharges and activities that may affect listed species and/or critical habitat. Also, the contractor shall support analyzing vessel data, specified invasive species databases, and other data sources as applicable to provide information to the EPA consistent with the latest version of the monitoring plan.

The monitoring data report will provide a summary of available VGP monitoring data (for calendar years 2014 and 2015) and an assessment of the potential impacts to listed species from specific vessel waste streams in the different regions of the United States, including the Great Lakes and other freshwater ecosystems.

Task 6 - Deliverables:

Deliverable	Deadline
Revise/Finalize Endangered Species Monitoring Plan	Draft within 60 days of technical direction from WACOR and any revisions within 15 days of receipt of comments from WACOR
2014 Endangered Species Monitoring Data Analysis Report	Based on technical direction from the WACOR
2014-2015 Draft Endangered Species Monitoring Data Analysis Report Outline	Based on technical direction from the WACOR
Revised 2014-2015 Endangered Species Monitoring Data Analysis Report Outline	2 weeks after receipt of comments from WACOR
Draft 2014-2015 Endangered Species Monitoring Data Analysis Report	2 months after WACOR acceptance of revised outline unless otherwise specified
Revised 2014-2015 Endangered Species Monitoring Data Analysis Report	1 month after receipt of comments from WACOR unless otherwise specified
Aquatic Nuisance Species Assessment Report	Based on technical direction from the WACOR

Task 7: Ballast Water Treatment System Sensor Inventory and “Next Generation” Ballast Water Monitoring

The VGP requires that vessel operators conduct monitoring when they use ballast water treatment systems to meet the requirements of the VGP. Most of the requirements, contained within functional monitoring, will be conducted using probes and other sensors. Additionally, there are several promising approaches for biological monitoring for future iterations of the VGP (e.g., see King and Tamburri, 2010 and Drake et al., 2014). EPA needs to better understand existing research and the status of prototype development of these systems as well as to examine current challenges faced in performing monitoring of vessel discharges.

Under the previous contract period, the contractor prepared a draft report that provides an inventory of sensors and probes on existing ballast water treatment systems having received U.S. Coast Guard Alternate Management System (AMS) determinations. The draft report identifies the types of sensors commonly employed on different types of treatment systems and the appropriateness of the parameters monitored. Under Task 7, the contractor will provide a revised report based on comments from the WACOR on the draft report summarizing existing ballast water treatment system sensors available and appropriate for the different categories of treatment (e.g., filtration, UV, electrochlorination) for vessels that could enter freshwater ecosystems.

The contractor shall summarize the state of “next generation” ballast water monitoring approaches that might potentially be used for future iterations or revisions of the VGP (e.g., fluorescence as an indicator of gross non-compliance for autotrophs, see Drake et al. 2014). This work shall include referencing and summarizing the existing state of the science, summarizing existing commercially available probes (e.g., Hach; turner scientific) and the validation work they have undergone to date, and identifying key needs to make using these tools feasible in self-monitoring applications.

Task 7 - Deliverables:

Deliverable	Deadline
BWTS Sensor Inventory Report	Revised draft within 60 days of technical direction from WACOR and any revisions within 15 days of receipt of comments from WACOR
Overview of Next Generation Monitoring Approaches for Ballast Water Discharges	January 31, 2017
Preliminary Assessment of Next Generation Monitoring Techniques for Ballast Water	April 30, 2017

Task 8: Support Implementation of the VGP and sVGP and other Vessel Program Outreach

The Contractor shall support EPA with the development of materials for implementation and outreach of the VGP and sVGP. Additionally, the Contractor shall support EPA’s development of outreach materials and efforts in support of its vessel program. Contractor shall prepare technical materials such as 1-2 page factsheets and power point presentations on permit conditions, internal as well as external stakeholder meetings, or

briefings for senior management. Contractor shall assume up to 10 short implementation fact sheets and implementation check lists. Some of those fact sheets may need to be translated into languages of the IMO (French, Spanish, Chinese, Russian, and/or Arabic). The contractor shall also support 0-5 online meetings and webinars as requested by the WACOR.

The Contractor will develop a report that summarizes the characteristics and conditions of vessels and vessel practices that could enter freshwater ecosystems based on information (i.e., from Notices of Intent, Notices of Termination, Vessel One-Time Reports, and Annual Reports) submitted to EPA under both the 2008 and 2013 VGPs. The report will also analyze vessels and vessel activities based on location to the extent possible, such as to identify the types of vessels operating on the Great Lakes and their operational and discharge characteristics.

Task 8 - Deliverables:

Deliverable	Deadline
Briefing Materials	Based on technical direction from the WACOR
Online Meeting/Webinar Support	<ul style="list-style-type: none"> - Registration pages within 1 week after technical direction from WACOR. - Summary reports within 2 weeks after completion of meeting/webinar.
Technical Memorandum and Background Information	Based on technical direction from the WACOR
Brochures, Fact Sheets	Based on technical direction from the WACOR
Other Outreach Materials	Based on technical direction from the WACOR
VGP Summary Report Data Quality Assessment	1 month after receipt of all data from WACOR
Draft VGP Summary Report Outline	2 weeks after receipt of comments on Data Quality Assessment
Revised VGP Summary Report Outline	1 week after receipt of comments on Draft Report Outline from WACOR
Draft VGP Summary Report	3 months after EPA acceptance of Revised Report Outline
Revised VGP Summary Report	1 month after receipt of comments from EPA

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						<input type="checkbox"/> Other <input checked="" type="checkbox"/> Amendment Number: 000001				
Contract Number EP-C-12-021			Contract Period 09/26/2012 To 09/25/2016			Title of Work Assignment/SF Site Name				
			Base Option Period Number 3			NPDES Vessel Reg Consideration				
Contractor EASTERN RESEARCH GROUP, INC.					Specify Section and paragraph of Contract SOW See PWS					
Purpose: <input type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input checked="" type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input checked="" type="checkbox"/> Work Plan Approval					Period of Performance From 03/30/2016 To 09/25/2016					
Comments: This Work Plan Approval incorporates Amendment 1.										
<input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund										
SFO <input type="checkbox"/> (Max 2) Note: To report additional accounting and appropriations date use EPA Form 1900-69A.										
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1										
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Authorized Work Assignment Ceiling										
Contract Period:		Cost/Fee: \$289,252.00		LOE: 2900						
09/26/2012 To 09/25/2016										
This Action:		\$288,822.00		2,916						
Total:		\$578,074.00		5,816						
Work Plan / Cost Estimate Approvals										
Contractor WP Dated: 04/27/2016		Cost/Fee \$288,822.00		LOE: 2,916						
Cumulative Approved:		Cost/Fee \$578,074.00		LOE: 5,816						
Work Assignment Manager Name Jack Faulk						Branch/Mail Code:				
_____ (Signature) (Date)						Phone Number: 202-564-0768				
						FAX Number:				
Project Officer Name Meghan Hessenauer						Branch/Mail Code:				
_____ (Signature) (Date)						Phone Number: 202-566-1040				
						FAX Number:				
Other Agency Official Name						Branch/Mail Code:				
_____ (Signature) (Date)						Phone Number:				
						FAX Number:				
Contracting Official Name Brad Heath						Branch/Mail Code:				
_____ (Signature) (Date)						Phone Number: 513-487-2352				
						FAX Number:				

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 3-54				
						<input type="checkbox"/> Other <input type="checkbox"/> Amendment Number:				
Contract Number EP-C-12-021			Contract Period 09/26/2012 To 09/25/2016 Base Option Period Number 3			Title of Work Assignment/SF Site Name CWT Study Technical Support				
Contractor EASTERN RESEARCH GROUP, INC.					Specify Section and paragraph of Contract SOW 3.0, 3.1, 3.3, 3.4, 3.5					
Purpose: <input checked="" type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input type="checkbox"/> Work Plan Approval						Period of Performance From 09/26/2015 To 09/25/2016				
Comments: Work shall not commence on this Work Assignment until September 26, 2015.										
<input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund										
SFO <input type="checkbox"/> (Max 2) Note: To report additional accounting and appropriations data use EPA Form 1900-69A.										
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Contractor WP Dated:				Cost/Fee:			LOE:			
Cumulative Approved:				Cost/Fee:			LOE:			
Work Assignment Manager Name Jesse Pritts <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number 202-566-1038 FAX Number:			
Project Officer Name Meghan Hessenauer <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: 202-566-1040 FAX Number:			
Other Agency Official Name <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: FAX Number:			
Contracting Official Name Brad Heath <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: 513-487-2352 FAX Number:			

**Performance Work Statement
Contract EP-C-12-021
Work Assignment 3-54**

Title: Centralized Waste Treatment Study Technical Support

Work Assignment Contracting

Officer's Representative (WACOR): Jesse Pritts

Alternate Work Assignment Contracting

Officer's Representative (Alternate WACOR): Lisa Biddle

Period of Performance (POP): September 26, 2015 through September 25, 2016

New Contracting Terminology From Environmental Protection Agency Acquisition Guide (EPAAG) Subsection 1.6.5
Contract-Level Contracting Officer's Representative (CL-COR) = Project Officer (PO)
Alternate Contract-Level Contracting Officer's Representative (Alternate CL-COR) = Alternate Project Officer (APO)
Work Assignment Contracting Officer's Representative (WACOR) = Work Assignment Manager (WAM)
Alternate Work Assignment Contracting Officer's Representative (Alternate WACOR) = Alternate Work Assignment Manager (AWAM)

I- Purpose

The purpose of this work assignment is to support EPA's development of a study to evaluate the centralized waste treatment category, specifically facilities that manage wastewater from oil and gas extraction activities.

II- Introduction

This work assignment supports EPA's development of a study of management of wastewaters from oil and gas extraction activities by centralized waste treatment (CWT) facilities.

EPA currently regulates discharges from the CWT category pursuant to effluent limitations guidelines and standards (collectively referred to as ELGs) found at 40 CFR Part 437. Some of these facilities accept wastewaters from oil and gas extraction activities. However, the treatment technologies used by some CWT facilities are not amenable to treatment of pollutants that may be found in oil and gas wastewaters, such as total dissolved solids (TDS) and radioactivity.

EPA is developing a study to evaluate management of these wastewaters. The study will be used to inform potential future agency activities regarding management of these wastewaters.

EPA has conducted a number of activities under WA 2-54. This work assignments continues work conducted under the previous work assignment and adds additional tasks.

III- General Work Assignment Requirements (PWS Section 3.0)

Deliverable Formatting and Terminology

Throughout this work assignment, the contractor shall provide draft and final reports to EPA in electronic format, with hard copy format also provided when directed by the work assignment manager. The contractor shall discuss the computer file formats to be used for word processing, spreadsheet, database and graphics with the WACOR prior to file preparation. The WACOR will identify for the contractor which documents will be posted on EPA's Effluent Guidelines webpage. These documents posted to the Effluent Guidelines webpage must be Section 508 compliant.¹

Travel

Non-local travel by the contractor employees and/or subcontractors will be required to support the scope of this work assignment (e.g., conducting site visits and sampling). The contractor shall provide specific travel details and costs in a request for travel approval by the WACOR and the Contract Level COR (CL-COR) before each trip occurs (as specified by the contract per clause H.32).

Event Expenses Not to Exceed \$20,000

No single event under this Work Assignment is anticipated to exceed \$20,000. The Contractor shall immediately notify the Contracting Officer (CO), CL-COR and WACOR of any anticipated event involving support for a meeting, conference, workshop, symposium, retreat, seminar, or training that may potentially incur \$20,000 or more in cost during performance. Conference expenses are all direct and indirect costs paid by the government and include any associated authorized travel and per diem expenses, room charges for official business, audiovisual use, light refreshments, registration fees, ground transportation and other expenses as defined by the Federal Travel Regulations. All outlays for conference preparation should be included, but the federal employee time for conference preparation should not be included. After notifying EPA of the potential to reach this threshold, the Contractor shall not proceed with the task(s) until authorized to do so by the Contracting Officer.

Confidential Business Information

The contractor shall, at all times, adhere to Confidential Business Information (CBI) procedures when handling industry information. The contractor shall manage all reports, documents, and other materials and all draft documents developed under this work assignment in accordance with the procedures set forth in the "Security Plan for Handling Confidential Business Information Under the Clean Water Act" (September 2002) or its successor approved plans.

¹ See <http://www.epa.gov/epahome/accessibility.htm>.

Identification as Contracting Staff

To avoid the perception that contractor personnel are EPA employees, contractor personnel shall be clearly identified as independent contractors of EPA when participating in events with outside parties and visiting field sites. When speaking with the public the contractor should refer all interpretations of policy to the WACOR.

Limitation of Contractor Activities

The contractor shall submit drafts of all deliverables to the WACOR for review prior to submission of the final product. The contractor shall incorporate all WACOR comments into all final deliverables, unless otherwise agreed upon by the WACOR. The contractor will adhere to all applicable EPA management control procedures as implemented by the CO, CL-COR and WACOR.

Deliverable Due Dates

For the purpose of developing this work plan, the contractor shall assume the deliverable due dates in the tables for each task presented further. Major technical deliverables shall be subject to internal contractor peer review by an expert(s) not directly involved in the mainstream Work Assignment tasks. Deliverables will be prepared with proper adherence to EPA style and format requirements.

IV- Tasks

Task 1: Program Management

The contractor shall prepare and submit a detailed work plan that outlines the approach and methodology that shall be used to perform the tasks identified in this Work Assignment. The work plan shall specify the work to be done for each task, and the allocation of personnel, hours and budget by task and deliverables. The work plan shall be submitted to the CL-COR and WACOR in accordance with contract requirements.

This task also includes contract management such as communications between WACORs and their respective contractor counterparts. These communications would concern the progress made on the work assignment tasks and coordination of activities to facilitate optimal contractor performance.

The contractor shall provide electronic copies of the monthly progress reports to the CO, CL-COR and WACOR. Each progress report shall describe the technical work and expenditures for the same time period as the corresponding invoice. The reports shall list by task the amount of work completed and include a table of hours by personnel for each task. The reports also shall identify any problems or difficulties. The contractor shall inform the CO, CL-COR and WACOR in writing when 50%, 75%, and 90% of the allocated hours or dollars have been expended.

TASK 1 DELIVERABLES	DEADLINES
Work Plan	In accordance with contract requirements
Progress Reports	monthly

Task 2: Technical Support for Preparation of Preliminary Data Summary of the Centralized Waste Treatment Industry

The contractor shall provide technical support to EPA in preparing a preliminary data summary (or study) of the CWT industry. The primary focus of this study is to evaluate current and future trends in the CWT industry with respect to treatment and management of wastewaters from oil and gas (O&G) extraction activities.

The recent increase in shale oil and shale gas extraction activities through practices such as hydraulic fracturing has created new challenges with respect to management of wastewaters. Flowback and produced waters from oil and gas extraction activities can contain a variety of pollutants, notably high levels of TDS and, depending on the formation, naturally occurring radioactivity. In addition, additives such as friction reducers and biocides are frequently utilized during well development and can contribute to wastewater pollutant loads.

While many wastewaters are recycled and reused by producers, treatment and discharge is being utilized in certain cases. Where these wastewaters are being managed by treatment and discharge at CWT facilities, there is the potential of discharge of pollutants of concern to Waters of the U.S. Some CWT facilities that are accepting these wastewaters, or may potentially accept these wastewaters in the future, may not have advanced treatment in place that is amenable to removal of the pollutants of concern. In addition, treatment of these wastewaters may present unique challenges, such as disposal of concentrated brines or other treatment residuals. The study will evaluate the full spectrum of wastewater management practices at CWT facilities accepting oil and gas extraction wastewaters, including treatment and discharge, recycling, zero discharge, barrel-in/barrel-out, etc.

The goal of the study is to evaluate current practice in the CWT industry with respect to oil and gas extraction wastewater management and to estimate, to the extent feasible, future industry trends at CWT facilities resulting from current and predicted oil and gas extraction wastewater management practices. Specifically, the contractor will provide support to EPA in preparing a report evaluating the following:

- Characterization of the CWT industry (number of facilities accepting or potentially accepting O&G wastewaters, types of treatment in place, quantities of wastewater being treated and discharged or otherwise managed (i.e., direct, indirect, zero), industry capacity, recycling and reuse opportunities, location and size of facilities, etc.)
- Current regulatory climate (state/local jurisdiction requirements/prohibitions, federal regulations, etc.)
- Treatment of oil and gas wastewaters (pollutants of concern, available treatment technologies and performance, costs, energy requirements, residuals management, pollutant transfer, etc.)
- Estimates of facility-specific and industry-wide pollutant discharges, to the extent feasible given limitations of data
- Estimates of costs to comply with alternative management practices

To obtain the necessary data for developing the study, EPA anticipates conducting site visits, sampling and field analysis at a number of facilities (Task 5). EPA also anticipates using Clean Water Act § 308 authority to collect information and data, such as wastewater treatment practices and costs, from nine or fewer centralized waste treatment companies, and/or oil and gas operators. The contractor shall assist EPA with the technical aspects of these activities, such as developing lists of questions and compiling information received.

Other potential data sources that the contractor may utilize in developing the study include technical and scientific literature, commercial data sources, vendors, internet searches, and state regulatory agencies. In addition, data collected under Task 5 is expected to be a primary source of information regarding wastewater characteristics and treatability.

Under a separate effort, EPA will also be collecting information related to economic aspects of the industry as well as environmental impacts associated with discharges from this industry. The cost and performance information obtained by the contractor may be used as inputs for these analyses. The contractor shall therefore consult with EPA regarding use of data and information collected and generated in these corollary analyses, and provide support activities as directed.

The following sub-tasks describe the major chapters of the study.

2.1 Industry Profile

The contractor shall update and finalize the industry profile of the CWT industry prepared under WA 2-54. The industry profile will provide a detailed discussion on the oil and gas extraction industry in the U.S., and shall include the following:

- A characterization of the oil and gas extraction industry based on existing data sources, including a discussion of the various segments of the industry (onshore, off-shore, coastal), with counts of existing wells by segment, oil and gas production by segment, and other relevant data and statistics to provide a broad overview of the current size and scope of the industry. To the extent that near-term and far-term estimates of new well drilling or oil and gas production exists, these estimates shall be included in the profile.
- A discussion of the regulations that apply to management oil and gas extraction wastewaters, including federal effluent guidelines and standards at 40 CFR 435 and 437, as well as relevant state-regulations for the major oil and gas producing regions of the country.
- Information that characterizes the number, type, size and location of CWT facilities in the U.S. and identification of those facilities that manage wastewater from oil and gas extraction activities and are thus in-scope of the current study. This includes those facilities regulated under 40 CFR 437, as well as facilities that discharge under 40 CFR 435 or other authority. For each of these in-scope facilities, identify the types of treatment in place at each facility, discharge status (direct discharge to surface waters, indirect discharge to a POTW, zero discharge facility, recycles, etc), residual waste disposal practices, as well as the types of wastes managed (including non-oil and gas wastes) and

the parameters requiring management in each facility's permit or pretreatment agreement. Include descriptions of the applicable guidelines and standards and pollutants regulated in permits or pretreatment agreements for each facility, where data is available.

2.2 Wastewater Characterization

The contractor shall update and finalize the detailed description of oil and gas wastewater characterization data prepared under WA 2-54. This shall include estimates of wastewater generation by well type, production method (e.g., conventional versus unconventional) and summaries of existing state and national-level data of wastewater production in the industry. Where data is not available on wastewater generation, the contractor shall develop such estimates in order to provide a national picture of wastewater management needs.

The contractor shall summarize and discuss data that characterizes the pollutants present in these wastewaters, including information on wastewater characteristics based on well type (e.g., conventional vs. unconventional production), phase (initial flowback, long-term produced water), and location (e.g., different plays).

The contractor shall estimate, to the extent feasible using existing data as well as estimates developed by the contractor, the volume of wastewater currently being managed by CWTs as well as other sources (injection, reuse, etc.) on a national scale. If sufficient data is available, these estimates shall be further developed on a state basis.

The profile shall also estimate loads of the major pollutants of concern (radium, barium, bromide, etc.) being discharged to surface waters and to POTWs based on available information or estimates generated by the contractor.

The contractor shall provide estimates, based on locations of CWTs determined under Task 2.1, of the number or proportion (or some other relevant indicator) of wells located within a generally economical distance (such as 100 miles) of known CWTs. The goal of this effort is to determine, on a rough basis, the percentage of wells that could potentially utilize CWTs for management of their wastewater, as well as to estimate areas that are currently not well served by CWTs. This will be used in the report give an indication of potential future CWT expansion needs.

The profile may be supplemented with information obtained from facilities, state oil and gas permitting and wastewater permitting agencies, commercial databases and EPA's data collection activities, as well as other data sources identified by EPA and the contractor. A discussion of management and disposal methods other than CWTs (e.g., injection) shall also be included, and estimates of future trends in wastewater generation and management based on existing projections of future oil and gas production for all disposal methods shall be included.

Where data is insufficient to provide estimates of volumes of wastewater and pollutants being discharged by the CWT industry, the contractor shall instead identify needed data and a methodology for collecting such data in order to provide estimates at a future time under a separate effort.

2.3 Wastewater Management Practices

The contractor shall update and finalize the description of wastewater management practices at CWTs managing oil and gas wastewaters prepared under WA 2-54. This chapter shall describe treatability of wastewaters, the unit treatment processes, costs, technical feasibility, and other relevant factors, including solid waste generation and residuals management. Other relevant topics, such as transportation methods, shall also be discussed.

2.4 Prepare Consolidated Study

The contractor shall prepare a draft and final CWT study report by combining the chapters described under Tasks 2.1 through 2.3 and other tasks under this work assignment. In addition, the contractor shall incorporate information on economics and environmental impacts developed under separate efforts into the report.

The contractor shall maintain an index of all data, studies and information obtained and generated and shall deliver this index on a monthly basis.

The following table contains the major deliverables and milestones under Task 2:

TASK	DELEVERABLE	DEADLINE
2.1	Draft Final Industry Profile Chapter	January 6, 2016
2.2	Draft Final Wastewater Characterization Chapter	February 10, 2016
2.3	Draft Final Wastewater Management Practices Chapter	December 9, 2015
2.4	Draft Final CWT Study Report	April 13, 2015
2.4	Final CWT Study Report incorporating WACOR comments	July 13, 2015

Task 3: Quality Assurance

EPA policy requires that an approved Quality Assurance Project Plan (QAPP) or Programmatic Quality Assurance Project Plan (PQAPP) be in place for work that involves the collection, generation, evaluation, analysis or use of primary environmental data. The QAPP or PQAPP defines and documents how specific data generation and collection activities shall be planned, implemented, and assessed during a particular project. This contract has an approved PQAPP for all necessary work envisioned under this work assignment, with the exception of supplemental

QA/QC information required to develop sampling and analysis plans (SAPs) for new data collection activities as described below.

Background

Quality Assurance Project Plans are required under the Agency's Quality Assurance Policy CIO-2105, formerly EPA Order 5360.1 A2 (May 2000), and implementing guidance CIO-2105-P-01-0 (May 2000). All projects that involve the generation, collection, analysis, and use of environmental data must have an approved Quality Assurance Project Plan (QAPP) in place prior to the commencement of the work. Examples of these environmental data operations are provided in **Table 3-1** below.

Table 3-1. Examples of work that involves the collection, generation, evaluation, analysis, or use of environmental data

Item	Examples
Data	Includes field sampling information (sample location information, flow measurements, temperature, pH, physical observations, etc.), laboratory measurements (e.g., chemical, physical, biological, radiological measurements), data collected from questionnaires, economic data, census data, and any other types of existing data (i.e., data generated for a different purpose or generated by a different organization)
Data generation	Includes field studies, laboratory studies, and generation of modeling output
Data collection	Includes field surveys, questionnaire surveys, literature searches, and third party data
Data evaluation	Includes data inspection, review, assessment, and validation
Data analysis	Includes statistical, engineering, and economic analysis, and testing, evaluation, and validation of methods and models; database creation, data extraction, and data manipulation
Data Use	Any use of data to support EPA decisions, regulations, policy, publications, or tools (including effluent guidelines, 304(m) program, standards, environmental assessments, and models, tools, or reports disseminated by EPA to assist other organizations in implementing environmental programs)

Note that QAPPs are required for the development or revision of models and software that support the generation, collection, evaluation, analysis, or use of data. (A model is set of equations and assumptions used to predict unknown data.) When existing models are used as a tool to generate or evaluate data, the project QAPP must describe the model and explain how it will be used and how its output will be evaluated to ensure the modeling effort meets the overall quality objectives for the project. Development or revision of new models also must be supported by a QAPP that describes the objectives for the model, the quality criteria that will be applied to the model, and the procedures for evaluating whether the model meets those criteria.

QA Project Plan Requirements

The Contractor has previously prepared a contract-wide Programmatic QAPP (PQAPP) for Contract EP-C-12-021. This PQAPP describes, in a single document, information that is not site or time-specific, but applies throughout the program (i.e., the duration of the contract). When tasked with preparing the PQAPP, the Contractor was informed that the PQAPP may need to be supplemented with project-specific details to support individual work assignments that involve the collection, generation, evaluation, analysis, or use of environmental data.

The activities in this work assignment involve gathering, evaluating, analyzing, and otherwise using existing environmental data (also known as “secondary” use of data). This work assignment also involves collection of new data, such as through field sampling and collection of data from companies through Clean Water Act (CWA) § 308 letters and surveys. EPA has determined that the Contractor is operating under the existing PQAPP and that the PQAPP addresses QA requirements for a portion of this work assignment related to existing data collection, as well as collection of new data through CWA § 308 letters and surveys. The applicable sections of the PQAPP are sections 4, 5, 6, 7, 8, 9 and 10.

In support of this work assignment, the Contractor shall ensure that the work plan provides enough detail to clearly describe:

- Specific objectives of the project(s) supported by this work assignment, including typical questions that must be answered when collecting and analyzing existing data to support the development of effluent guidelines industry studies, in this case, for the Centralized Waste Treatment industry.
- The type of data to be gathered or used under this work assignment to support the project objectives—including data from search engines, federal databases, EPA databases—as a well as a rationale for when those databases are appropriate and what data available in each will support the project
- The quality objectives needed to ensure the data will support the project objectives, and
- The QA/QC activities to be performed to ensure that any results obtained are documented and are of the type, quality, transparency, and reproducibility needed.

Under WA 1-54, the contractor prepared a draft Sampling and Analysis Plan (SAP) for the CWT study that included preliminary information related to sampling and analysis at CWTs. Under this WA, the contractor shall prepare facility-specific SAPs for each of the three sampling episodes to be completed under Task 5. Each of these SAPs shall contain facility-specific information about sample locations, sampling methods, etc.

Prior to conducting sampling activities, the contractor shall also be responsible for preparing a supplemental QA/QC plan (SQAPP) for these field sampling activities. The SQAPP must be approved by the WACOR as well as the EAD QA coordinator prior to conducting any field sampling activities. **Table 3-2** at the end of this Task demonstrates the supplemental QA/QC information that must be included in the SQAPP for collection of new data.

Additional QA Documentation Required

The EPA Quality Manual for Environmental Programs (CIO 2105-P-01-0, May 2000) requires published Agency reports containing environmental data to be accompanied by a readily

identifiable section or appendix that discusses the quality of the data and any limitations on the use of the data with respect to their originally intended application. The EPA Quality Manual further requires Agency reports to be reviewed by the QA manager (or other authorized official) before publication to ensure that an adequate discussion of QA and QC activities is included. The purpose of the review is to ensure the reports provide enough information to enable a knowledgeable reader to determine if the technical and quality goals were met for the intended use of the data. Reports should include applicable statements regarding the use of any environmental data presented as a caution about possible misuse of the data for other purposes. For example, a Technical Support Document or Study Report must include a clear discussion of the quality management strategies (including the project goals and objectives, quality objectives and criteria, and QA/QC practices) that were employed to control and document the quality of data generated and used. These documents should also discuss any deviations from procedures documented in the EPA-approved QAPP(s) supporting the project, the reasons for those deviations, any impact of those deviations had on data quality, and steps taken to mitigate data quality issues.

In support of this Agency requirement, all major deliverables (e.g., Reports) produced by the Contractor under this work assignment must include a discussion of the QA/QC activities that were performed to support the deliverable, and this discussion must provide a sufficient level of detail to allow the EAD QA Coordinator (or designee) to determine if the QA/QC strategies implemented for the project sufficiently support the intended use of the data. Upon receipt, the WACOR will review each applicable report and certify whether the Contractor has adhered to the QA requirements documented in the Contractor's PQAPP.

The Contractor also shall provide EPA with monthly reports of QA activities performed during implementation of this work assignment. These monthly QA reports shall identify QA activities performed to support implementation of this work assignment, problems encountered, deviations from the QAPP, and corrective actions taken. If desired, the Contractor may include this as a part of the contract-required monthly financial/technical progress report.

TASK 3 DELIVERABLES	DEADLINES
SQAPP for field sampling activities	Must be approved by the WACOR and EAD QA coordinator 14 days prior to any field sampling activities
Facility-Specific Sampling Plans	According to Task 5.2 Deadlines
Monthly reports of QA work performed (may be included in the Contractor's monthly progress report)	Monthly

Table 3-2. QAPP Elements that Require Additional Explanation in SQAPP Under Task 5 for CWT Study Sampling Activities

CWT Study QA Checklist			
QAPP Element	Sufficiently Addressed in PQAPP or Not Applicable to Project	Additional Detail Needed in SQAPP	Explanatory Comments Regarding Additional Detail Needed
A1. Title & Approval Sheet		X	Facility-specific information required for each location to be sampled
Project title		X	
Organization's name		X	
Effective date and/or version identifier		X	
Dated signature of Organization's project manager		X	
Dated signature of Organization's QA manager		X	
Other signatures, as needed (e.g., EAD Project Officer, EAD QA Coordinator)		X	
Revision History		X	
A2. Table of Contents		X	Update
Includes sections, figures, tables, references, and appendices		X	
Document control information indicated (when required by the EPA Project Manager and QA Manager)		X	
A3. Distribution List		X	Update
Includes all individuals who are to implement or otherwise receive the QAPP and identifies their organization		X	
A4. Project/Task Organization		X	Update to identify specific personnel and roles/responsibilities for Task 5. Include specific details, such as laboratory QA/QC personnel.
Identifies key individuals with their responsibilities (e.g., data users, decision makers, project QA manager, Subcontractors, etc.) and contact info.		X	
Organization chart shows lines of authority & reporting responsibilities		X	
Project QA manager position indicates independence from unit collecting/using data		X	
A5. Problem Definition/Background		X	Describe specific data collection goals of project to be obtained through field sampling.
Clearly states problem to be resolved, decision to be made, or hypothesis to be tested		X	
Identifies project objectives or goals		X	
Historical & background information		X	
Cites applicable technical, regulatory, or program-specific quality standards, criteria, or objectives		X	
A6. Project/Task Description		X	Describe specific sampling activities to be conducted, sample locations, analytes, QA/QC measures, etc.
List measurements to be made/data to obtain		X	
Notes special personnel or equipment requirements		X	
Provides work schedule		X	

CWT Study QA Checklist			
QAPP Element	Sufficiently Addressed in PQAPP or Not Applicable to Project	Additional Detail Needed in SQAPP	Explanatory Comments Regarding Additional Detail Needed
A7. Quality Objectives & Criteria for Measurement Data		X	Describe specific quality and measurement objectives to be utilized
States quality objectives and limits, both qualitatively & quantitatively		X	
States & characterizes measurement quality objectives as to applicable action levels or criteria		X	
A8. Special Training Requirements/ Certifications		X	Describe any specific training or certification requirements needed and procedures for training
Identifies specialized skills, training or certification requirements		X	
Discusses how this training will be provided/the necessary skills will be assured and documented		X	
A9. Documents & Records		X	Describe what data will be generated, how data will be obtained/presented, how QA/QC measures will be documented, procedures for record keeping, etc.
Lists information & records to be included in data report (e.g., raw data, field logs, results of QC checks, problems encountered)		X	
Notes required project & QA records/reports		X	
Gives retention time and location for records and reports		X	
B1. Sampling Process Design (Experimental Design)		X	Fully document sampling design and factors such as matrix interferences due to TDS, analysis of radioactivity, sampling equipment, etc.
Types and number of samples required		X	
Sampling network design & rationale for design		X	
Sampling locations & frequency of sampling		X	
Sample matrices		X	
Classification of each measurement parameter as either critical or needed for information only		X	
Validation study information, for non-standard situations		X	
B2. Sampling Method Requirements		X	Fully describe analytical methods to be utilized, sampling techniques, equipment, etc.
Identifies sample collection procedures & methods		X	
Lists equipment needs		X	
Identifies support facilities		X	
Identifies individuals responsible for corrective action		X	

CWT Study QA Checklist			
QAPP Element	Sufficiently Addressed in PQAPP or Not Applicable to Project	Additional Detail Needed in SQAPP	Explanatory Comments Regarding Additional Detail Needed
B3. Sample Handling & Custody Requirements		X	Fully document sample handling, preservation, shipping and tracking
Notes sample handling requirements		X	
Notes chain of custody procedures, if required	X		COC not required for this project
B4. Analytical Methods Requirements		X	Fully describe and reference both field and laboratory methods to be utilized and specific requirements for laboratories utilized. Includes deviations from approved analytical methods due to projected matrix interferences.
Identifies analytical methods to be followed (with all options) & required equipment		X	
Specifies any specific method performance criteria		X	
States requested lab turnaround time		X	
Provides validation information for non-standard methods		X	
Identifies procedures to follow when failures occur		X	
Identifies individuals responsible for corrective action and appropriate documentation		X	
B5. Quality Control Requirements		X	Fully document QC procedures and goals for field and laboratory analyses
Identifies QC procedures & frequency for each sampling analysis, or measurement technique, as well as associated acceptance criteria and corrective action		X	
Procedures used to calculate QC statistics (e.g., precision, bias, accuracy)		X	
B6. Instrument/Equipment Testing, Inspection, and Maintenance Requirements		X	Fully document relevant requirements and procedures for both field analytes and laboratory analyses
Identifies acceptance testing of sampling and measurement systems		X	
Describes equipment needing maintenance and frequency for such maintenance		X	
Notes availability & location of spare parts		X	
B7. Instrument Calibration & Frequency		X	Include for field instruments
Identifies equipment needing calibration and frequency for such calibration		X	
Notes required calibration standards and/or equipment		X	
Cites calibration records & manner traceable to equipment		X	

CWT Study QA Checklist			
QAPP Element	Sufficiently Addressed in PQAPP or Not Applicable to Project	Additional Detail Needed in SQAPP	Explanatory Comments Regarding Additional Detail Needed
B8. Inspection/Acceptance Requirements for Supplies & Consumables		X	Document relevant criteria
States acceptance criteria for supplies & consumables		X	
Notes responsible individuals		X	
B9. Data Acquisition Requirements for Non-Direct Measurements	X		
Identifies type of data needed from non-measurement sources (e.g., computer databases and literature files), along with acceptance criteria for their use			
Describes any limitations of such data			
B10. Data Management		X	Update to consider laboratory/field collected data
Describes standard record keeping & data storage and retrieval requirements	X		
Checklist or standard forms attached to QAPP		X	
Describes data handling equipment & procedures used to process, compile and analyze data (e.g., required computer hardware & software)	X		
C1. Assessment and Response Actions		X	Update to consider laboratory/field collected data
Lists required number, frequency, & type of assessments, with approximate date & names of responsible personnel		X	
Identifies individuals responsible for corrective actions		X	
C2. Reports to Management		X	Update to consider laboratory/field collected data
Identifies the preparer and recipients of reports			
Identifies frequency and distribution of reports for:			
• Project status			
• Results of performance evaluations & audits			
• Results of periodic data quality assessments			
• Any significant QA problems			
D1. Data Review, Verification & Validation		X	Update to consider laboratory/field collected data
States criteria for accepting, rejecting, or qualifying data			
Includes project-specific calculations or algorithms			
D2. Verification & Validation Methods		X	Update to consider laboratory/field collected data
Describes process for data verification and validation			
Identifies issue resolution procedure and responsible individuals			
Identifies method for conveying these results to data users			

CWT Study QA Checklist			
QAPP Element	Sufficiently Addressed in PQAPP or Not Applicable to Project	Additional Detail Needed in SQAPP	Explanatory Comments Regarding Additional Detail Needed
D3. Reconciliation with User Requirements		X	Update to consider laboratory/field collected data
Describes process for reconciling with DQOs and reporting limitations on use of data			

Task 4: General Technical Support

Using information provided by the WACOR, along with information gathered or developed by the contractor, the contractor shall assemble information, create and/or modify documents and perform analyses related to centralized waste treatment facilities as directed by the WACOR through written technical direction. The tasks may include work such as:

- Summarizing data to brief management
- Collecting and analyzing secondary data
- Attending meetings or preparing materials and participating in meetings, conferences and workshops to support EPA's outreach activities to the public and industry (these materials may include reports, brochures, maps, or other presentation materials)
- Attending centralized waste treatment industry technical meetings and/or conferences as directed by EPA
- Contacting state agencies to collect information about common wastewater management practices and availability of waste water treatment facilities for oil and gas extraction wastewaters

For purposes of preparing a work plan, the contractor shall assume that there shall be approximately ten written technical directives requiring quick turn-around and the contractor will be asked to attend two conferences.

TASK 4: DELIVERABLES	DEADLINES
General technical support (as above)	2 days after receiving technical direction, or as specified in technical direction, from the WACOR

Task 5: Site Visits, Sampling and Field Analysis

5.1 Site Visits

The contractor shall provide support to EPA in conducting site visits at CWTs and other facilities that accept oil and gas extraction wastewaters. Support shall include identifying candidate facilities that accept oil and gas wastewaters, scheduling conference calls with facility personnel to obtain detailed facility information and to schedule visits, obtaining operational information

from facilities (treatment technologies in place, facility size and flow rates, existing monitoring data, etc.), drafting site visit reports and conducting follow-up activities. The contractor shall attend site visits in order to obtain, evaluate and document facility information and to assist EPA in identifying facilities that may be candidates for subsequent sampling activities. For purposes of preparing a cost estimate, the contractor shall assume that three (3) two-day site visits will be conducted to facilities across the U.S. during this work assignment period of performance. This includes one site visit in California, one in Pennsylvania and one in Wyoming. The contractor shall prepare draft and final site visit reports as indicated in the Task 5 Deliverables Table below. Site visit reports shall include detailed documentation of information obtained during the site visits.

5.2 Characterization Sampling

The contractor shall provide support to EPA in conducting wastewater characterization sampling activities at CWT facilities that accept oil and gas extraction wastewaters. The contractor shall assist EPA in identifying candidate facilities for sampling. EPA anticipates that characterization sampling under Task 5.2 will consist primarily of one-time grab sampling for characterization purposes. These characterization samples will have the following purposes:

- Characterize untreated wastewater characteristics for wastewaters produced from oil and gas extraction operations that are received at CWT facilities
- Characterize treated effluent characteristics for determining facility effectiveness in removing target pollutants
- Characterize wastewater characteristics at intermediate treatment points to determine unit process effectiveness in removing target pollutants
- Characterize treatment residuals and discharges from other ancillary activities

Parameters to be analyzed in samples collected during sampling episodes are shown in Table 5-1.

Table 5-1. Analytes for Characterization Sampling

Group I Classics
Total Suspended Solids (TSS)
Total Dissolved Solids (TDS)
Specific Conductance
Turbidity
pH
Alkalinity
Group II Classics
Chemical Oxygen Demand (COD)
Total Organic Carbon (TOC)
Other Classics
HEM/SGT-HEM
Biochemical Oxygen Demand (BOD5)
Cyanide (total)
Total Hardness
Anions
Bromide, chloride, fluoride, and sulfate
Total Metals

Aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, molybdenum, nickel, selenium, silver, sodium, thallium, tin, titanium, vanadium, and zinc
Mercury
Hexavalent Chromium
Total Uranium, Total Thorium
Organics
Diesel range and gasoline range organics
Volatile organic compounds
Semivolatile organic compounds
Radioactives
Total Radium (226, and 228)
Gross alpha/beta
Total Strontium

The final list of analytes and analytical methods shall be prepared in consultation with the WACOR.

For purposes of preparing a work plan, the contractor shall assume that three (3) one-day characterization sampling episodes shall be conducted during the period of performance of this work assignment. The contractor shall assume two contractors shall participate in characterization sampling episodes in Pennsylvania, Wyoming, and Ohio. A total of six sample points are anticipated at each of the four locations to be sampled. Additional samples for quality assurance (such as duplicate and trip blank, field blank, matrix spike, etc.) samples shall also be collected, as specified in individual Sampling and Analysis Plans (SAPs) for each location.

The contractor shall provide all sampling equipment, materials (such as sampling bottles), supplies and consumables (such as ice) necessary to conduct the sampling, preserve samples and to package and ship the samples to laboratories. The contractor shall also be responsible for freight/shipment and tracking of samples to analytical laboratories and maintaining documentation (such as traffic reports).

Laboratory Services

The contractor shall provide technical support to EPA in acquiring laboratory services to analyze the samples for parameters of interest. In obtaining laboratory services, the contractor shall ensure that the laboratory(ies) demonstrates sufficient recent experience and qualifications and identify methods to be used for analyzing oil and gas wastewater samples (or samples with similar matrices) and that laboratory services comply with EPA's *Policy to Assure Competency of Laboratories, Field Sampling, and Other Organizations Generating Environment Measurement Data under Agency-Funded Acquisitions (FEM-2011-01)*. These wastewaters have unique characteristics and complex matrices. Total dissolved solids (TDS) concentrations in samples can exceed 120,000 mg/L according to available data. Laboratories shall also have experience in analyzing radionuclides expected to be present in these samples. These high levels of chlorides and other dissolved solids can pose significant challenges to laboratory analysts. As a result, the contractor shall consult with EPA regarding appropriate analytical methods and sample collection, handling, preparation and preservation and coordinate with laboratories in

advance of sample collection in order to ensure that methods selected for analysis of samples and the laboratories obtained are capable of detecting parameters at the concentrations expected.

In addition, field analysis of parameters such as temperature, pH and conductivity may be required.

The contractor shall review available data that has been compiled by EPA regarding the expected level of these parameters in these wastewaters and consult with the WACOR regarding analytical methods and detection levels for the pollutants of interest. In addition, the contractor may recommend additional parameters based on review of existing data regarding these wastewater characteristics. Adjustments to analytes and methods must be reflected in the SAPs.

The contractor shall ensure that the laboratories report results in a similar manner for all episodes, including the reporting of results for metals that are below the report limit but above the method detection limit (e.g., J-values). The contractor shall consult with EPA regarding time frames for laboratories to submit analytical results prior to selection of laboratory services.

In addition, the contractor shall coordinate with laboratories to ensure timely and efficient analysis of the collected wastewater samples; perform data quality reviews and resolve issues that may arise from those reviews; and evaluate pollutant characteristics and treatment efficacy. The contractor shall prepare and maintain a Sample Tracking Report that shall include a summary of any problems identified and the status of efforts to resolve the problems. The contractor shall consult with the WACOR when any laboratory or data quality issues arise in order to address these issues in a timely fashion. The contractor shall compile the laboratory results in a format approved by EPA and as described in the laboratory competency policy.

The services to be performed under this task are strictly limited to those of a technical and scientific nature, encompassing the tasks of collecting samples, acquiring laboratory services, including tracking the location and status of collected samples throughout the entire analytical and data reporting process. The contractor shall also coordinate with laboratories to ensure timely and efficient analysis of the collected wastewater samples; resolve issues that may arise during sample analysis or during QA/QC reviews of laboratory results; and provide technical support to EPA regarding analytical methods, data review, quality assurance, and the effluent guidelines sampling program.

Documentation

Sampling Plans and Sampling Episode Reports

Each characterization sampling episode shall require the development of a site-specific sampling and analysis plan (SAP) and a site-specific health and safety (H&S) plan. Draft and final SAPs shall be developed according to the schedule of deliverables table below. The SAPs shall provide detailed descriptions on the locations to be sampled, the parameters to be sampled, the sample collection and preservation techniques to be utilized, sample labeling and tracking protocols, and other information and protocols as necessary to assure the successful collection, handling, preservation, shipping and tracking of samples. The SAPs shall also contain detailed information

on field parameters to be measured and collection of operational details regarding the facilities sampled (e.g., flow rates, etc.).

For facilities where site visits have been conducted in advance of any characterization sampling, much of the facility-specific information (e.g., sampling locations, number of sample points, equipment needed, etc.) required to prepare SAPs and H&S plans will have been obtained in advance during site visits. EPA anticipates that for some facilities, characterization sampling may be conducted at the same time as site visits, and that the contractor or EPA will not have conducted a previous visit. In these cases, facility-specific information necessary to prepare SAPs and H&S plans will be obtained through discussions with facility personnel. Specific details on SAPs and H&S plans shall be developed for each characterization sampling episode through consultation with the WACOR.

At the completion of each sampling episode, the contractor shall develop a draft sampling episode report (SER) that documents the sampling conducted and any deviations from the SAP. As sampling results are available, the contractor shall compile the data into data result tables for use in the final draft SERs.

Sample Tracking Report

The contractor shall create and maintain information files which contain the status of all samples collected, including sample collection date, date of sample receipt at the laboratory, date laboratory analytical data is received, status of data quality reviews, and projected timeframes for completing reviews of data. The report shall also identify any anticipated problems or difficulties that might result in scheduling delays. This information shall be provided monthly until all samples collected by EPA have been analyzed and the database of laboratory results is complete.

5.3. General Technical Support

If necessary, the contractor shall provide general technical support to EPA regarding analytical methods, data review, quality assurance and the effluent guidelines sampling program. During the period of performance, the contractor may have to respond to approximately 3-5 technical support inquiries. The following are activities the contractor may have to perform:

- Provide the WACOR with technical responses to analytical method and data inquiries;
- Research solutions to analytical problems;
- Conduct literature searches;
- Fill document requests;
- Provide the raw laboratory data and information related to data review; and
- Track the status and disposition of technical inquiries.

TASK 5 SCHEDULE OF DELIVERABLES

TASK	DELIVERABLE	DEADLINE
5.1	Draft Site Visit Report	14 Days after completion of site visit
	Final Site Visit Report	14 Days after receipt of comments from EPA
5.2	Draft SAPs and H&SP	21 days prior to sampling episode
	Final SAPs and H&SP	7 days after receiving EPA comments on the draft sampling plan.
	Draft SER (without data)	14 days after completing the sampling episode
	Revised SER	7 days after receiving EPA comments
	Final SER (with data)	7 days after final QC data is available
	Database of laboratory analytical results	September 25, 2016

Task 6: Support for Questionnaire Development

The contractor shall provide support in developing industry questionnaires and Clean Water Act (CWT) §308 letters. Under a separate contract, EPA will develop and administer questionnaires to nine or fewer CWT facilities to collect technical and financial information. Under this work assignment, the contractor shall provide support in developing questions of a technical and engineering nature to be included in questionnaires to be sent to CWT facilities. These questions will be specific to areas such as facility size, waste acceptance, treatment technologies, flow rates, residuals management, etc. The contractor shall also provide other support for questionnaire development as specified through technical direction, such as selecting facilities for receiving questionnaires, contacting facilities to clarify technical and engineering responses, etc.

TASK 6: DELIVERABLES	DEADLINES
Draft Technical and engineering questions for questionnaires	As established through technical direction
Final Technical and engineering questions for questionnaires	14 Days after receiving EPA review comments
Other technical and engineering questionnaire support	As specified in technical direction

Task 7: Management of Confidential Business Information

During the course of the work assignment, the contractor shall be accessing and evaluating CBI. As such, the contractor shall adhere to EPA's CBI policy and procedures as described in the contract performance work statement, Section 3.0, for all tasks in this WA, as applicable. The contractor shall obtain CBI security clearance to use CBI information as outlined in Section 3.0 of Contract EP-C-12-021. The contractor shall utilize CBI information in accordance with contract requirements and limitations to include using its most recent "Security Plan for Handling Confidential Business Information under the Clean Water Act." The contractor shall also utilize CBI information in accordance with contract requirements and limitations, including the TSCA CBI security plan as required.

TASK 7 DELIVERABLES	DEADLINES
A CBI program in compliance with the requirements of contract EP-C-12-021 and the requirements of the contractor's CBI Plan.	Ongoing

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 3-54				
						<input type="checkbox"/> Other <input type="checkbox"/> Amendment Number:				
Contract Number EP-C-12-021			Contract Period 09/26/2012 To 09/25/2016 Base Option Period Number 3			Title of Work Assignment/SF Site Name CWT Study Technical Support				
Contractor EASTERN RESEARCH GROUP, INC.					Specify Section and paragraph of Contract SOW 3.0, 3.1, 3.3, 3.4, 3.5					
Purpose: <input checked="" type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input checked="" type="checkbox"/> Work Plan Approval						Period of Performance From 09/26/2015 To 09/25/2016				
Comments:										
<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund </div>										
Note: To report additional accounting and appropriations data use EPA Form 1900-69A.										
SFO <input type="checkbox"/> (Max 2)										
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										
Authorized Work Assignment Ceiling										
Contract Period:		Cost/Fee: \$0.00		LOE: 0						
09/26/2012 To 09/25/2016										
This Action:		\$491,198.00		4,166						
Total:		\$491,198.00		4,166						
Work Plan / Cost Estimate Approvals										
Contractor WP Dated: 10/19/2015		Cost/Fee: \$491,198.00		LOE: 4,166						
Cumulative Approved:		Cost/Fee: \$491,198.00		LOE: 4,166						
Work Assignment Manager Name Jesse Pritts <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>						Branch/Mail Code: Phone Number 202-566-1038 FAX Number:				
Project Officer Name Meghan Hessenauer <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>						Branch/Mail Code: Phone Number: 202-566-1040 FAX Number:				
Other Agency Official Name <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>						Branch/Mail Code: Phone Number: FAX Number:				
Contracting Official Name Brad Heath <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>						Branch/Mail Code: Phone Number: 513-487-2352 FAX Number:				

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 3-55				
						<input type="checkbox"/> Other <input type="checkbox"/> Amendment Number:				
Contract Number EP-C-12-021			Contract Period 09/26/2012 To 09/25/2016 Base Option Period Number 3			Title of Work Assignment/SF Site Name Petroleum Refining Study				
Contractor EASTERN RESEARCH GROUP, INC.					Specify Section and paragraph of Contract SOW See PWS					
Purpose: <input checked="" type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input type="checkbox"/> Work Plan Approval						Period of Performance From 09/26/2015 To 09/25/2016				
Comments: Work shall not commence on this Work Assignment until September 26, 2015.										
<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund </div>										
Note: To report additional accounting and appropriations data use EPA Form 1900-69A.										
SFO <input type="checkbox"/> (Max 2)										
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										
Authorized Work Assignment Ceiling										
Contract Period:		Cost/Fee:				LOE:				
09/26/2012 To 09/25/2016										
This Action:										
Total:										
Work Plan / Cost Estimate Approvals										
Contractor WP Dated:				Cost/Fee:			LOE:			
Cumulative Approved:				Cost/Fee:			LOE:			
Work Assignment Manager Name Samantha Lewis <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number 202-566-1058 FAX Number:			
Project Officer Name Meghan Hessenauer <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: 202-566-1040 FAX Number:			
Other Agency Official Name <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: FAX Number:			
Contracting Official Name Brad Heath <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: 513-487-2352 FAX Number:			

**Performance Work Statement
Contract EP-C-12-021
Work Assignment 3-55**

Title: Petroleum Refining Detailed Study

Work Assignment Contracting

Officer's Representative (WACOR): Samantha Lewis

Alternate Work Assignment Contracting

Officer's Representative (Alternate WACOR): Karen Milam

Period of Performance (POP): September 26, 2015 through September 25, 2016

New Contracting Terminology From Environmental Protection Agency Acquisition Guide (EPAAG) Subsection 1.6.5
Contract-Level Contracting Officer's Representative (CL-COR) = Project Officer (PO)
Alternate Contract-Level Contracting Officer's Representative (Alternate CL-COR) = Alternate Project Officer (APO)
Work Assignment Contracting Officer's Representative (WACOR) = Work Assignment Manager (WAM)
Alternate Work Assignment Contracting Officer's Representative (Alternate WACOR) = Alternate Work Assignment Manager (AWAM)

I- Purpose

The purpose of this work assignment is to support EPA's development of a study to evaluate the petroleum refining category.

II- Introduction

This work assignment supports EPA's development of a study of wastewaters from petroleum refining (PR) facilities.

EPA currently regulates discharges from the PR category pursuant to effluent limitations guidelines and standards (collectively referred to as ELGs) found at 40 CFR Part 419. A study of this category will help EPA determine if changes to the existing ELGs are needed. Recent changes to the industry may have resulted in new wastestreams or wastewater characteristics. EPA has observed an increase in metals discharges as well as an increase in the number of refineries reporting metals discharges. However, only one metal (chromium) was included in the current PR ELGs.

As part of the study, EPA plans to collect updated industry profile information to identify refineries that use catalytic reforming, process heavy crude; and have installed new air pollution control equipment that generates wastewater. Also EPA will identify pollutants of interest and associated wastewater treatment technologies for these pollutants. EPA will also use the study to

identify additional data needs for this industry, including information on industry economics and potential environmental impacts of current discharges. EPA may collect additional data through permit and permit application reviews, site visits, or other methods.

III- General Work Assignment Requirements (PWS Section 3.0)

Deliverable Formatting and Terminology

Throughout this work assignment, the contractor shall provide draft and final reports to EPA in electronic format, with hard copy format also provided when directed by the WACOR. The contractor shall discuss the computer file formats to be used for word processing, spreadsheet, database and graphics with the WACOR prior to file preparation. The WACOR will identify for the contractor which documents will be posted on EPA's Effluent Guidelines webpage. These documents posted to the Effluent Guidelines webpage must be Section 508 compliant.¹

Travel

Non-local travel by the contractor employees and/or subcontractors will be required to support the scope of this work assignment (e.g., conducting site visits). The contractor shall provide specific travel details and costs in a request for travel approval by the WACOR and the Contract-Level COR (CL-COR) before each trip occurs (as specified by the contract per clause H.32).

Event Expenses Not to Exceed \$20,000

No single event under this Work Assignment is anticipated to exceed \$20,000. The Contractor shall immediately notify the EPA Contracting Officer (CO), CL-COR and WACOR of any anticipated event involving support for a meeting, conference, workshop, symposium, retreat, seminar or training that may potentially incur \$20,000 or more in cost during performance. Conference expenses are all direct and indirect costs paid by the government and include any associated authorized travel and per diem expenses, room charges for official business, audiovisual use, light refreshments, registration fees, ground transportation and other expenses as defined by the Federal Travel Regulations. All outlays for conference preparation should be included, but the federal employee time for conference preparation should not be included. After notifying EPA of the potential to reach this threshold, the Contractor shall not proceed with the task(s) until authorized to do so by the CO.

Confidential Business Information

The contractor shall, at all times, adhere to Confidential Business Information (CBI) procedures when handling industry information. The contractor shall manage all reports, documents, and other materials and all draft documents developed under this work assignment in accordance with the procedures set forth in the "Security Plan for Handling Confidential Business Information Under the Clean Water Act" (September 2002) or its successor approved plans.

¹ See <http://www.epa.gov/epahome/accessibility.htm>.

Identification as Contracting Staff

To avoid the perception that contractor personnel are EPA employees, contractor personnel shall be clearly identified as independent contractors of EPA when participating in events with outside parties and visiting field sites. When speaking with the public the contractor should refer all interpretations of policy to the WACOR.

Limitation of Contractor Activities

The contractor shall submit drafts of all deliverables to the WACOR for review prior to submission of the final product. The contractor shall incorporate all WACOR comments into all final deliverables, unless otherwise agreed upon by the WACOR. The contractor will adhere to all applicable EPA management control procedures as implemented by the CO, CL-COR and WACOR.

Deliverable Due Dates

For the purpose of developing this work plan, the contractor shall assume the deliverable due dates in the tables for each task presented further. Major technical deliverables shall be subject to internal contractor peer review by an expert(s) not directly involved in the mainstream Work Assignment tasks. Deliverables will be prepared with proper adherence to EPA style and format requirements.

IV- Tasks

Task 1: Program Management

The contractor shall prepare and submit a detailed work plan that outlines the approach and methodology that shall be used to perform the tasks identified in this Work Assignment. The work plan shall specify the work to be done for each task, and the allocation of personnel, hours and budget by task and deliverables. The work plan shall be submitted to the CL-COR and WACOR in accordance with contract requirements.

This task also includes contract management such as technical communications between EPA CORs and their respective contractor counterparts. These technical communications would concern the progress made on the work assignment tasks and coordination of activities to facilitate optimal contractor performance. All technical direction per Contract Clause **H-20 EPA 1552.237-71 Technical direction. (AUG 2009)** shall be followed up in writing by the WACOR or CL-COR within 5 days of verbal communication.

The contractor shall provide electronic copies of the monthly progress reports to the CO, CL-COR and WACOR. Each progress report shall describe the technical work and expenditures for the same time period as the corresponding invoice. The reports shall list by task the amount of work completed and include a table of hours by personnel for each task. The reports also shall identify any problems or difficulties. The contractor shall inform the CO, CL-COR and WACOR in writing when 50%, 75%, and 90% of the allocated hours or dollars have been expended.

TASK 1 DELIVERABLES	DEADLINES
Work Plan	In accordance with contract requirements
Progress Reports	Monthly

Task 2: Technical Support for Preparation of Preliminary Data Summary of the Petroleum Refining Industry

The contractor shall provide technical support to EPA in preparing a preliminary data summary (or study) of the Petroleum Refining (PR) industry. The contractor shall use the report generated under Task 10 of WA 1-05 of this contract, Petroleum Refinery Preliminary Study as well as the summary memos developed under Task 2 of WA 2-55 as a starting point for the preliminary data summary. The primary focus of this study is to evaluate current and future trends in the PR industry to determine if changes to the existing ELGs are needed.

Recent changes to the industry may have resulted in new wastestreams or wastewater characteristics. EPA has observed an increase in metals discharges as well as an increase in the number of refineries reporting metals discharges. However, only one metal (chromium) was included in the current PR ELGs.

Specifically, the contractor will provide support to EPA in evaluating the following:

- Updated industry profile information to identify refineries that use catalytic reforming, process heavy crude; and have installed new air pollution control equipment that generates wastewater.
- Identification of pollutants of interest and associated wastewater treatment technologies for these pollutants.
- Identification of additional data needs for this industry, including information on industry economics and potential environmental impacts of current discharges.
- Collection of additional data through permit and permit application reviews, site visits, or other methods.

To obtain the necessary data for developing the study, EPA anticipates conducting site visits to a number of facilities (Task 7). EPA also anticipates using Clean Water Act § 308 authority to collect information and data from nine or fewer petroleum refining companies (Task 3). The contractor shall assist EPA with the technical aspects of these activities, such as developing lists of questions and compiling information received.

Other potential data sources that the contractor may utilize in developing the study include technical and scientific literature, commercial data sources, vendors, internet searches, and state regulatory agencies. In addition, data collected under Tasks 3 and 7 is expected to be a primary source of information regarding wastewater characteristics and treatability.

The contractor shall also collect information related to economic aspects of the industry as well as environmental impacts associated with discharges from this industry. The cost and performance information obtained by the contractor may be used as inputs for these analyses.

The contractor shall therefore consult with EPA regarding use of data and information collected and generated in these corollary analyses.

The contractor shall maintain an index of all data, studies and information obtained and generated and shall deliver this index on a monthly basis.

The contractor shall update the preliminary report on the petroleum refining industry generated under Task 10 of WA 1-05 and the summary memos generated under Task 2 of WA 2-55 of this contract, as needed to generate a draft preliminary data summary for the industry. This preliminary data summary shall continue to update existing information that characterizes the number, type, production, feedstock, air pollution control equipment, information on unit processes of interest (e.g. which facilities have catalytic reformers and the type), size and location of PR facilities. The profile may be supplemented with information obtained from facilities, state oil and gas permitting and wastewater permitting agencies, commercial databases and EPA's data collection activities, as well as other data sources identified by EPA and the contractor.

The preliminary data summary shall also include a detailed description of PR wastewater characterization data, including key wastestreams and pollutants of interest. This summary shall include information from permit reviews, site visits and from information collection requests.

The preliminary data summary shall also discuss current pollution prevention and treatment methods. The treatment technology database shall be used to identify additional treatment methods. A literature search, site visits, information from permit reviews and information collection requests shall also be used.

The following table contains the major deliverables and milestones under Task 2:

TASK 2 DELIVERABLES	DELIVERABLE	DEADLINE
	Outline of Preliminary Data Summary	April 12, 2016
	Updated Preliminary Data Summary - Draft	July 10, 2016
	Updated Preliminary Data Summary - Second Draft	September 10, 2016

Task 3: Clean Water Act (CWA) §308 Questionnaire

EPA will use Clean Water Act (CWA) §308 authority to collect information and data from nine or fewer petroleum refining companies. The contractor shall assist EPA with developing the questions to ask facilities as well as a potential facility distribution list. The contractor shall include questions on potential environmental impacts of current discharges if necessary. The contractor shall work with EPA to determine how the §308 questionnaires will be distributed. The contractor shall also provide other support for questionnaire development as specified through technical direction, such as meeting with industry to discuss the questionnaires and contacting facilities to clarify technical and engineering responses, etc.

For purposes of this WA, the contractor shall assume that they will develop draft §308 questions in Microsoft Word or Excel format and that they will develop an initial distribution list. Also, the contractor shall distribute the questionnaire to the selected respondents. The contractor shall assume that the §308 request will not be mailed until Spring 2016. Therefore, the contractor shall assume that questionnaire responses will not be received in time to analyze the results and incorporate them into final reports under this work assignment.

PR Industry Self-Sampling Plan

The contractor shall include in the §308 questionnaire a request for each of the 9 companies to provide wastewater characterization data to EPA and document the request in a PR Industry Self-Sampling Plan. The contractor shall provide support to EPA in identifying specific types of wastewater characterization self-sampling data to request from PR facilities. EPA anticipates that self-sampling will consist primarily of one-time grab sampling for characterization purposes. These characterization samples may have the following purposes:

- Characterize untreated wastewater characteristics prior to commingling with other wastewater streams
- Characterize wastewater characteristics at intermediate treatment points to determine unit process effectiveness in removing target pollutants
- Characterize treated effluent characteristics

Sample analyses may include, but not be limited to: total dissolved solids, conventional pollutants, classicals, volatile organics, semi-volatile organics and metals. The final list of analytes and analytical methods to be used by industry shall be prepared in consultation with the WACOR. Additional samples for quality assurance shall also be collected by industry, as specified in the PR Industry Self-Sampling Plan.

The contractor shall prepare a draft and final PR Industry Self-Sampling Plan for characterization sample collection, including preparation of supplemental sampling QAPPs covering data collection activities that are not addressed in the existing PQAPP, according to the Task 5 below.

The contractor shall review available data regarding the expected level of parameters in these wastewaters and consult with the WACOR regarding analytical methods and detection levels for the pollutants of interest. In addition, the contractor may recommend additional parameters based on review of existing data regarding these wastewater characteristics.

The contractor shall specify in the questionnaire that the industry report results back to EPA in a specific manner and format, including the reporting of results for metals that are below the report limit but above the method detection limit (e.g., J-values).

TASK 3 DELIVERABLES	DEADLINES
Draft questions for questionnaires and Draft PR Industry Self-Sampling Plan	December 16, 2016
Final Questionnaire and Final PR Industry Self-Sampling Plan	14 Days after receiving EPA review comments

Task 4: Environmental Assessment

As directed by the WACOR, the contractor shall draft the environmental assessment section of the detailed study, including a summary of literature review completed and any case studies identified.

TASK 4 DELIVERABLES	DEADLINES
Draft Environmental Assessment Section of the detailed study, including a summary of literature review completed and any case studies identified.	Via Technical Direction from the WACOR

Task 5: Quality Assurance

EPA policy requires that an approved Quality Assurance Project Plan (QAPP) or Programmatic Quality Assurance Project Plan (PQAPP) be in place for work that involves the collection, generation, evaluation, analysis or use of primary environmental data. The QAPP or PQAPP defines and documents how specific data generation and collection activities shall be planned, implemented, and assessed during a particular project. This contract has an approved PQAPP for all necessary work envisioned under this work assignment, with the exception of supplemental QA/QC information in the PR Industry Self-Sampling Plan for new data collection activities as described below and in Task 3 above.

Background

Quality Assurance Project Plans are required under the Agency's Quality Assurance Policy CIO-2105, formerly EPA Order 5360.1 A2 (May 2000), and implementing guidance CIO-2105-P-01-0 (May 2000). All projects that involve the generation, collection, analysis, and use of environmental data must have an approved Quality Assurance Project Plan (QAPP) in place prior to the commencement of the work. Examples of these environmental data operations are provided in **Table 5-1** below.

Table 5-1. Examples of work that involves the collection, generation, evaluation, analysis, or use of environmental data

Item	Examples
Data	Includes field sampling information (sample location information, flow measurements, temperature, pH, physical observations, etc.), laboratory measurements (e.g., chemical, physical, biological, radiological measurements), data collected from questionnaires, economic data, census data, and any other types of existing data (i.e., data generated for a different purpose or generated by a different organization)
Data generation	Includes field studies, laboratory studies, and generation of modeling output
Data collection	Includes field surveys, questionnaire surveys, literature searches, and third party data
Data evaluation	Includes data inspection, review, assessment, and validation
Data analysis	Includes statistical, engineering, and economic analysis, and testing, evaluation, and validation of methods and models; database creation, data extraction, and data manipulation
Data Use	Any use of data to support EPA decisions, regulations, policy, publications, or tools (including effluent guidelines, 304(m) program, standards, environmental assessments, and models, tools, or reports disseminated by EPA to assist other organizations in implementing environmental programs)

Note that QAPPs are required for the development or revision of models and software that support the generation, collection, evaluation, analysis, or use of data. (A model is set of equations and assumptions used to predict unknown data.) When existing models are used as a tool to generate or evaluate data, the project QAPP must describe the model and explain how it will be used and how its output will be evaluated to ensure the modeling effort meets the overall quality objectives for the project. Development or revision of new models also must be supported by a QAPP that describes the objectives for the model, the quality criteria that will be applied to the model, and the procedures for evaluating whether the model meets those criteria.

QA Project Plan Requirements

The Contractor has previously prepared a contract-wide Programmatic QAPP (PQAPP) for Contract EP-C-12-021. This PQAPP describes, in a single document, information that is not site or time-specific, but applies throughout the program (i.e., the duration of the contract). When tasked with preparing the PQAPP, the Contractor was informed that the PQAPP may need to be supplemented with project-specific details to support individual work assignments that involve the collection, generation, evaluation, analysis, or use of environmental data.

The activities in this work assignment involve gathering, evaluating, analyzing, and otherwise using existing environmental information (also known as “secondary” use of information). This work assignment also involves collection of new data, such as collection of data from companies through Clean Water Act (CWA) § 308 questionnaires. EPA has determined that the Contractor is operating under the existing PQAPP and that the PQAPP addresses QA requirements for a this

work assignment as related to existing data collection, as well as collection of new data through CWA § 308 questionnaires. The applicable sections of the PQAPP are sections 4, 5, 7, 8, 9 and 10. In support of this work assignment, the Contractor shall ensure that the work plan provides enough detail to clearly describe:

- Specific objectives of the project(s) supported by this work assignment, including typical questions that must be answered when collecting and analyzing existing data to support the development of effluent guidelines industry studies, in this case, for Petroleum Refining industry.
- The type of data to be gathered or used under this work assignment to support the project objectives—including data from search engines, federal databases, EPA databases—as a well as a rationale for when those databases are appropriate and what data available in each will support the project
- The quality objectives needed to ensure the data will support the project objectives, and
- The QA/QC activities to be performed to ensure that any results obtained are documented and are of the type, quality, transparency, and reproducibility needed.

The contractor shall be responsible for providing supplemental QA/QC information in the PR Industry Self-Sampling Plan for new data collection activities described in Task 3. The PR Industry Self-Sampling Plan shall contain supplemental QA/QC information that is currently addressed in the existing PQAPP. **Table 5-2** at the end of this Task demonstrates the supplemental QA/QC information that must be included in this Plan for collection of new data.

Additional QA Documentation Required

The EPA Quality Manual for Environmental Programs (CIO 2105-P-01-0, May 2000) requires published Agency reports containing environmental data to be accompanied by a readily identifiable section or appendix that discusses the quality of the data and any limitations on the use of the data with respect to their originally intended application. The EPA Quality Manual further requires Agency reports to be reviewed by the QA manager (or other authorized official) before publication to ensure that an adequate discussion of QA and QC activities is included. The purpose of the review is to ensure the reports provide enough information to enable a knowledgeable reader to determine if the technical and quality goals were met for the intended use of the data. Reports should include applicable statements regarding the use of any environmental data presented as a caution about possible misuse of the data for other purposes. For example, a Technical Support Document or Study Report must include a clear discussion of the quality management strategies (including the project goals and objectives, quality objectives and criteria, and QA/QC practices) that were employed to control and document the quality of data generated and used. These documents should also discuss any deviations from procedures documented in the EPA-approved QAPP(s) supporting the project, the reasons for those deviations, any impact of those deviations had on data quality, and steps taken to mitigate data quality issues.

In support of this Agency requirement, all major deliverables (e.g., Reports) produced by the Contractor under this work assignment must include a discussion of the QA/QC activities that were performed to support the deliverable, and this discussion must provide a sufficient level of detail to allow the EAD QA Coordinator (or designee) to determine if the QA/QC strategies implemented for

the project sufficiently support the intended use of the data. Upon receipt, the WACOR will review each applicable report and certify whether the Contractor has adhered to the QA requirements documented in the Contractor's PQAPP.

The Contractor also shall provide EPA with monthly reports of QA activities performed during implementation of this work assignment. These monthly QA reports shall identify QA activities performed to support implementation of this work assignment, problems encountered, deviations from the QAPP, and corrective actions taken. If desired, the Contractor may include this as a part of the contract-required monthly financial/technical progress report.

TASK 5 DELIVERABLES	DEADLINES
Monthly reports of QA work performed (may be included in the Contractor's monthly progress report)	Monthly

Table 5-2. QAPP Elements that Require Additional Explanation in PR Industry Self-Sampling Plan Under Task 3 for PR 308 Questionnaire Applicable to WA 3-55 Petroleum Refining Detailed Study, EP-C-12-021.

QAPP Element	Sufficiently Addressed in PQAPP or Not Applicable to Project	Additional Detail Needed in SQAPP	Explanatory Comments Regarding Additional Detail Needed
A1. Title & Approval Sheet		X	Self-sampling plan will require approval and signature
Project title		X	
Organization's name		X	
Effective date and/or version identifier		X	
Dated signature of Organization's project manager		X	
Dated signature of Organization's QA manager		X	
Other signatures, as needed (e.g., EAD Project Officer, EAD QA Coordinator)		X	
Revision History		X	
A2. Table of Contents		X	Update
Includes sections, figures, tables, references, and appendices		X	
Document control information indicated (when required by the EPA Project Manager and QA Manager)		X	
A3. Distribution List		X	Update
Includes all individuals who are to implement or otherwise receive the QAPP and identifies their organization		X	
A4. Project/Task Organization		X	Update to identify specific personnel and roles/responsibilities for Task 3. Include specific details, such as laboratory QA/QC personnel.
Identifies key individuals with their responsibilities (e.g., data users, decision makers, project QA manager, Subcontractors, etc.) and contact info.		X	

QAPP Element	Sufficiently Addressed in PQAPP or Not Applicable to Project	Additional Detail Needed in SQAPP	Explanatory Comments Regarding Additional Detail Needed
Organization chart shows lines of authority & reporting responsibilities		X	
Project QA manager position indicates independence from unit collecting/using data		X	
A5. Problem Definition/Background		X	Describe specific data collection goals of project to be obtained through field sampling.
Clearly states problem to be resolved, decision to be made, or hypothesis to be tested		X	
Identifies project objectives or goals		X	
Historical & background information		X	
Cites applicable technical, regulatory, or program-specific quality standards, criteria, or objectives		X	
A6. Project/Task Description		X	Describe specific sampling activities to be conducted, sample locations, analytes, QA/QC measures, etc.
List measurements to be made/data to obtain		X	
Notes special personnel or equipment requirements		X	
Provides work schedule		X	
A7. Quality Objectives & Criteria for Measurement Data		X	Describe specific quality and measurement objectives to be utilized
States quality objectives and limits, both qualitatively & quantitatively		X	
States & characterizes measurement quality objectives as to applicable action levels or criteria		X	
A8. Special Training Requirements/ Certifications		X	Describe any specific training or certification requirements needed and procedures for training, as necessary
Identifies specialized skills, training or certification requirements		X	
Discusses how this training will be provided/the necessary skills will be assured and documented		X	
A9. Documents & Records		X	Describe what data will be generated, how data will be obtained/presented, how QA/QC measures will be documented, procedures for record keeping, etc.
Lists information & records to be included in data report (e.g., raw data, field logs, results of QC checks, problems encountered)		X	
Notes required project & QA records/reports		X	
Gives retention time and location for records and reports		X	
B1. Sampling Process Design (Experimental Design)		X	Fully document sampling design and factors such as matrix interferences due to TDS, sampling equipment, etc.
Types and number of samples required		X	
Sampling network design & rationale for design		X	
Sampling locations & frequency of sampling		X	

QAPP Element	Sufficiently Addressed in PQAPP or Not Applicable to Project	Additional Detail Needed in SQAPP	Explanatory Comments Regarding Additional Detail Needed
Sample matrices		X	
Classification of each measurement parameter as either critical or needed for information only		X	
Validation study information, for non-standard situations		X	
B2. Sampling Method Requirements		X	Fully describe analytical methods to be utilized, sampling techniques, equipment, etc.
Identifies sample collection procedures & methods		X	
Lists equipment needs		X	
Identifies support facilities		X	
Identifies individuals responsible for corrective action		X	
B3. Sample Handling & Custody Requirements		X	Fully document sample handling, preservation, shipping and tracking
Notes sample handling requirements		X	
Notes chain of custody procedures, if required	X		
B4. Analytical Methods Requirements		X	Fully describe and reference both field and laboratory methods to be utilized and specific requirements for laboratories utilized
Identifies analytical methods to be followed (with all options) & required equipment		X	
Specifies any specific method performance criteria		X	
States requested lab turnaround time		X	
Provides validation information for non-standard methods		X	
Identifies procedures to follow when failures occur		X	
Identifies individuals responsible for corrective action and appropriate documentation		X	
B5. Quality Control Requirements		X	Fully document QC procedures and goals for field and laboratory analyses
Identifies QC procedures & frequency for each sampling analysis, or measurement technique, as well as associated acceptance criteria and corrective action		X	
Procedures used to calculate QC statistics (e.g., precision, bias, accuracy)		X	
B6. Instrument/Equipment Testing, Inspection, and Maintenance Requirements		X	Provide direction for facility to fully document relevant requirements and procedures for both field analytes and laboratory analyses
Identifies acceptance testing of sampling and measurement systems		X	
Describes equipment needing maintenance and frequency for such maintenance		X	
Notes availability & location of spare parts		X	

QAPP Element	Sufficiently Addressed in PQAPP or Not Applicable to Project	Additional Detail Needed in SQAPP	Explanatory Comments Regarding Additional Detail Needed
B7. Instrument Calibration & Frequency		X	Provide direction to facility for field instruments
Identifies equipment needing calibration and frequency for such calibration		X	
Notes required calibration standards and/or equipment		X	
Cites calibration records & manner traceable to equipment		X	
B8. Inspection/Acceptance Requirements for Supplies & Consumables		X	Document relevant criteria
States acceptance criteria for supplies & consumables		X	
Notes responsible individuals		X	
B9. Data Acquisition Requirements for Non-Direct Measurements	X		
Identifies type of data needed from non-measurement sources (e.g., computer databases and literature files), along with acceptance criteria for their use			
Describes any limitations of such data			
B10. Data Management		X	Update to consider laboratory/field collected data
Describes standard record keeping & data storage and retrieval requirements	X		
Checklist or standard forms attached to QAPP		X	
Describes data handling equipment & procedures used to process, compile and analyze data (e.g., required computer hardware & software)	X		
C1. Assessment and Response Actions		X	Update to consider laboratory/field collected data
Lists required number, frequency, & type of assessments, with approximate date & names of responsible personnel		X	
Identifies individuals responsible for corrective actions		X	
C2. Reports to Management		X	Update to consider laboratory/field collected data
Identifies the preparer and recipients of reports			
Identifies frequency and distribution of reports for:			
• Project status			
• Results of performance evaluations & audits			
• Results of periodic data quality assessments			
• Any significant QA problems			
D1. Data Review, Verification & Validation		X	Update to consider laboratory/field collected data
States criteria for accepting, rejecting, or qualifying data			
Includes project-specific calculations or algorithms			
D2. Verification & Validation Methods		X	Update to consider laboratory/field collected data
Describes process for data verification and validation			
Identifies issue resolution procedure and responsible individuals			

QAPP Element	Sufficiently Addressed in PQAPP or Not Applicable to Project	Additional Detail Needed in SQAPP	Explanatory Comments Regarding Additional Detail Needed
Identifies method for conveying these results to data users			
D3. Reconciliation with User Requirements		X	Update to consider laboratory/field collected data
Describes process for reconciling with DQOs and reporting limitations on use of data			

Task 6: General Technical Support

Using information provided by the WACOR, along with information gathered or developed by the contractor, the contractor shall assemble information, create and/or modify documents and perform analyses related to petroleum refining facilities as directed by the WACOR through written technical direction. The tasks may include work such as:

- Summarizing data to brief management
- Collecting and analyzing existing data
- Attending meetings or preparing materials and participating in meetings, conferences and workshops to support EPA's outreach activities to the public and industry (these materials may include reports, brochures, maps, or other presentation materials)
- Attending petroleum refining industry technical meetings and/or conferences as directed by the WACOR
- Contacting state agencies to collect information about petroleum refining operations, wastewater discharges and wastewater treatment.

For purposes of preparing a work plan, the contractor shall assume that there shall be approximately ten written technical directives requiring quick turn-around and the contractor will be asked to attend two meetings or conferences that require travel.

TASK 6 DELIVERABLES	DEADLINES
General technical support (as above)	2 days after receiving technical direction, or as specified in technical direction, from the WACOR

Task 7: Site Visits

The contractor shall provide support to EPA in conducting site visits at petroleum refining facilities. Support shall include identifying candidate facilities, scheduling conference calls with facility personnel to obtain detailed facility information and to schedule visits, obtaining operational information from facilities (treatment technologies in place, crude oil types processed, air pollution control, facility size and flow rates, existing monitoring data, etc.), drafting site visit reports and conducting follow-up activities. The contractor shall attend site

visits in order to obtain, evaluate and document facility information and to assist EPA in identifying facilities that may be candidates for subsequent sampling activities. For purposes of preparing a cost estimate, the contractor shall assume that six (6) one-day site visits (three trips with two visits in each trip) will be conducted to facilities across the U.S. during this work assignment period of performance. The contractor shall prepare draft and final site visit reports as indicated in the Task 7 Deliverables Table below. Site visit reports shall include detailed documentation of information obtained during the site visits.

For purposes of preparing a work plan, the contractor shall assume the three site visits will be to Cleveland, OH, San Francisco, CA and Houston, TX.

TASK 7 DELIVERABLES	DELIVERABLE	DEADLINE
	Draft Site Visit Report	14 Days after completion of site visit
	Final Site Visit Report	14 Days after receipt of comments from EPA

Task 8: Management of Confidential Business Information

During the course of the work assignment, the contractor shall be accessing and evaluating CBI. As such, the contractor shall adhere to EPA's CBI policy and procedures as described in the contract performance work statement, Section 3.0, for all tasks in this WA, as applicable. The contractor shall obtain CBI security clearance to use CBI information as outlined in Section 3.0 of Contract EP-C-12-021. The contractor shall utilize CBI information in accordance with contract requirements and limitations to include using its most recent "Security Plan for Handling Confidential Business Information under the Clean Water Act." The contractor shall also utilize CBI information in accordance with contract requirements and limitations, including the TSCA CBI security plan as required.

TASK 8 DELIVERABLES	DEADLINES
A CBI program in compliance with the requirements of contract EP-C-12-021 and the requirements of the contractor's CBI Plan.	Ongoing

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 3-55				
						<input type="checkbox"/> Other <input type="checkbox"/> Amendment Number:				
Contract Number EP-C-12-021			Contract Period 09/26/2012 To 09/25/2016 Base Option Period Number 3			Title of Work Assignment/SF Site Name Petroleum Refining Study				
Contractor EASTERN RESEARCH GROUP, INC.					Specify Section and paragraph of Contract SOW See PWS					
Purpose: <input checked="" type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input checked="" type="checkbox"/> Work Plan Approval						Period of Performance From 09/26/2015 To 09/25/2016				
Comments:										
<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund </div>										
Note: To report additional accounting and appropriations data use EPA Form 1900-69A.										
SFO <input type="checkbox"/> (Max 2)										
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										
Authorized Work Assignment Ceiling										
Contract Period:		Cost/Fee: \$0.00				LOE: 0				
09/26/2012 To 09/25/2016										
This Action:		\$404,513.00				4,000				
Total:		\$404,513.00				4,000				
Work Plan / Cost Estimate Approvals										
Contractor WP Dated: 10/15/2015		Cost/Fee: \$404,513.00				LOE: 4,000				
Cumulative Approved:		Cost/Fee: \$404,513.00				LOE: 4,000				
Work Assignment Manager Name Samantha Lewis <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>						Branch/Mail Code: Phone Number 202-566-1058 FAX Number:				
Project Officer Name Meghan Hessenauer <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>						Branch/Mail Code: Phone Number: 202-566-1040 FAX Number:				
Other Agency Official Name <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>						Branch/Mail Code: Phone Number: FAX Number:				
Contracting Official Name Brad Heath <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>						Branch/Mail Code: Phone Number: 513-487-2352 FAX Number:				

Work Assignment Form. (WebForms v1.0)

Work Assignment Form. (WebForms v1.0)

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 3-57				
						<input type="checkbox"/> Other <input type="checkbox"/> Amendment Number:				
Contract Number EP-C-12-021			Contract Period 09/26/2012 To 09/25/2016			Title of Work Assignment/SF Site Name				
			Base Option Period Number 3			Coastal Watershed Synthesis				
Contractor EASTERN RESEARCH GROUP, INC.					Specify Section and paragraph of Contract SOW 3.0					
Purpose: <input checked="" type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input type="checkbox"/> Work Plan Approval					Period of Performance From 09/26/2015 To 09/25/2016					
Comments: Work shall not commence on this Work Assignment until September 26, 2015.										
<input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund										
Note: To report additional accounting and appropriations data use EPA Form 1900-69A.										
SFO (Max 2) <input type="checkbox"/>										
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										
Authorized Work Assignment Ceiling										
Contract Period:		Cost/Fee:			LOE:					
09/26/2012 To 09/25/2016										
This Action:										
Total:										
Work Plan / Cost Estimate Approvals										
Contractor WP Dated:				Cost/Fee:			LOE:			
Cumulative Approved:				Cost/Fee:			LOE:			
Work Assignment Manager Name Karen Simpson							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number 617-918-1672			
							FAX Number:			
Project Officer Name Meghan Hessenauer							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number: 202-566-1040			
							FAX Number:			
Other Agency Official Name							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number:			
							FAX Number:			
Contracting Official Name Brad Heath							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number: 513-487-2352			
							FAX Number:			

**Performance Work Statement
Contract EP-C-12-021
Work Assignment 3-57**

Title: Southeast New England Coastal Watershed Synthesis Prioritization Support

Work Assignment Contracting

Officer's Representative (WACOR): Karen Simpson

Period of Performance (POP): September 26, 2015 through September 25, 2016

New Contracting Terminology From Environmental Protection Agency Acquisition Guide (EPAAG) Subsection 1.6.5
Contract-Level Contracting Officer's Representative (CL-COR) = Project Officer (PO)
Alternate Contract-Level Contracting Officer's Representative (Alternate CL-COR) = Alternate Project Officer (APO)
Work Assignment Contracting Officer's Representative (WACOR) = Work Assignment Manager (WAM)
Alternate Work Assignment Contracting Officer's Representative (Alternate WACOR) = Alternate Work Assignment Manager (AWAM)

BACKGROUND

Excess nitrogen (N) and/or phosphorus (P) in waterways is a critical problem in the United States and around the world. Excess nutrients cause overgrowth of algae, leading to harmful algal blooms, hypoxia, drinking water contamination, and subsequent productivity and economic losses. For coastal systems in particular, nutrients are an increasingly dominant stressor.

In an effort to catalyze fresh solutions, policy innovations, and technological advances for addressing nutrient pollution in coastal watersheds, EPA in partnership with other organizations has launched the Southeast New England Coastal Watershed Restoration Program (SNECWRP). This new geographic program includes the watersheds of the Narragansett Bay and Buzzards Bay NEPs as well as southern Cape Cod, and Block Island, Martha's Vineyard, and Nantucket. SNECWRP's primary goals are to protect and restore ecosystem function at a regional scale, foster ecological and human resilience, and promote innovative environmental policy and technology.

Although many federal, state, local, and non-governmental entities are currently engaged in these areas, SNECWRP offers a significant opportunity to undertake coordinated and collaborative restoration planning on a regional, ecosystem scale. As part of this planning process, there is a need for a unifying set of objectives and priorities. Many if not most of these may already be expressed in the myriad planning and prioritization reports produced within the SNECWRP region. To aid in coordination and the development of program priorities for nutrient interventions, EPA will help to organize and convene a forum for SNECWRP stakeholders and participants to identify sources of existing priorities, discuss overlaps and gaps, and recommend a suite of shared priorities for restoration and protection; discussion will focus in particular on integrated approaches for managing nutrients as the driving stressor now and under future

climate change scenarios.

PURPOSE OF THE SNECWRP FORUM

The SNECWRP geographic region is rich in state, NGO, and federal planning efforts, including two National Estuary Programs (NEPs) whose charge includes developing and implementing comprehensive conservation and management plans (CCMPs). However, each of these entities has limited responsibility and jurisdiction. No one body is charged with considering broad ecological needs across the Southeast New England coastal region as a whole, or has the tools to adequately address the full range of coastal issues in this region. In order to coordinate these efforts, EPA will:

- 1) synthesize and analyze existing priorities for the SNECWRP coastal region with the goal of identifying shared concerns and planning steps;
- 2) summarize progress, gaps, and opportunities in science, technology, and community- and market-based solutions for nutrient management; and
- 3) organize a forum to engage stakeholders in visioning an overall planning framework and action agenda that builds on and complements existing planning and implementation capacities, and identifies a suite of shared priorities for the SNECWRP region over a planning horizon to be determined

An outcome will be more effective coordination among the numerous entities working to restore coastal watersheds, more efficient allocation of disparate funding sources, engagement of the technology and business communities, and targeted restoration projects that address regionally significant priorities. An additional outcome will be more integrated federal engagement in nutrient pollution solutions.

Outside experts will be invited as necessary to provide additional information and to support and facilitate the discussion.

The one to one and a half-day meeting will be held in the SNECWRP geographic area and will include members of the SNECWRP working group, experts, and additional stakeholders identified in the course of summarizing existing products, plus facilitators, with an emphasis on novel expertise and interest across the spectrum of technological and social challenge opportunities. Federal and state agencies will be engaged to contribute technical expertise and facilities support. The cost estimate for this statement of work has been revised to account for costs in the event that we are unable to secure a suitable no-cost or minimal cost facility for the forum. It also accounts for time spent to develop more robust agenda, speaker input, and facilitation strategy beyond that estimated in the contractor's current workplan.

SCOPE OF WORK

The Contractor shall work with EPA to undertake the synthesis, review, and analysis of current priorities expressed throughout the SNECWRP region, and to plan and execute the forum. Specifically, the Contractor shall work with EPA to scope out the universe of materials and stakeholders to be consulted in developing the synthesis, prepare a draft and final analysis/report, develop an agenda for the forum, assist with facilitating and capturing discussion among participants, and manage forum logistics and follow-up. Follow-up will include summary notes

from forum discussions, including recommendations and next steps.

TASKS

1. Task 1- Program Management

The Contractor shall develop a work plan describing the necessary steps and estimated hours to complete each of the tasks included in this work assignment. The work plan shall also include a list of the key personnel to participate in the work assignment. Additionally, the Contractor shall provide an estimate of all direct costs (i.e. computer costs, transcription, etc.) that are anticipated under this work assignment.

The Contractor shall prepare and deliver monthly progress reports to the CO, CL-COR and WACOR. These reports shall list, by task, the amount of work completed, and should include a table of hours by personnel for each task. The contractor shall inform the CO, CL-COR and WACOR in writing when 50%, 75%, and 90% of the allocated hours and dollars have been expended.

TASK 1. – DELIVERABLES	Due Date
Work Plan	In accordance with contract requirements
Progress Reports	Monthly

2. Task 2 – Planning Review, Synthesis, and Analysis:

- a. In consultation with the WACOR, the Contractor shall compile and review initial information taken from state, local, NGO, and other sources; these sources may include documents, public policy statements, monitoring strategies, budget analyses, and websites in place throughout the SNECWRP geographic region regarding current water quality, habitat, ecosystem function, community resilience, and other issues of concern.
- b. Based on the initial review, at the direction of the WACOR, the Contractor may conduct interviews with targeted stakeholders and information holders to clarify or supplement information from written sources.
- c. Based on the results of the review, the Contractor shall prepare a draft and final report analyzing overlaps, gaps, goals, and common issues in Rhode Island and Massachusetts and suggesting priority areas for discussion and action by SNECWRP participants. Based on comments provided by the WACOR, the final report shall include a summary and annotated bibliography of sources consulted, especially findings related to emerging and cost-effective approaches for managing nutrients on an ecosystem basis, inter-related roles of habitat and water quality, promotion of green infrastructure and watershed connectivity, and measures to ensure ecosystem resilience. The Contractor shall also summarize social and economic factors that may hinder or promote adoption of these approaches.
- d. The Contractor shall prepare materials and documentation from the final report to present findings in a SNECWRP-sponsored forum to identify areas where SNECWRP can facilitate consensus and next steps for shared priorities, including

- identifying any analyses needed to follow up from the forum in areas such as common standards for infrastructure siting, healthy watershed maintenance, monitoring approaches, etc.
- e. Based on data identified in comprehensive review (above), develop series of GIS maps to help better visualize and understand key connectivity features to be addressed in maintaining or restoring the region's ecological resilience; the Contractor will provide files and data needed to produce SNECWRP GIS layers.

TASK 2 – DELIVERABLES	Due Date
Draft synthesis report of information taken from state, local, NGO, and other sources	Eight weeks after work assignment begins.
Final report with recommendations	12 weeks after work assignment begins
Forum presentation materials	14 weeks after work assignment begins
Progress Reports	Monthly

3. Task 3 – SNECWRP Forum

- a. The Contractor, with input from the WACOR, shall handle logistics for the forum, including securing the location, arranging travel and accommodation for any invited experts in a manner that is consistent with federal travel guidelines, preparing and securing and distributing materials in advance of the meeting, and serving as note-taker in general and breakout sessions. The Contractor shall also serve as a facilitating participant in the forum. In addition, during the forum the Contractor shall provide general logistical support, including but not limited to:
- Conference room setup and breakdown, including preparing for IT or other technology needs and presentation needs
 - Check-in table staffing and name tag/table tent distribution
 - Escorting guests to and from security entrances if necessary
 - Managing lunch and morning and afternoon snacks
 - Collecting flip chart notes and any other items used to facilitate discussions
 - Other tasks as identified in consultation from the WACOR

TASK 3. – DELIVERABLES	Due Date
Forum organization, logistics, and participation	TBD NTE end of November 2015
Progress Reports	Weekly conference calls once prep begins

4. Task 4 – Post-Meeting

The Contractor shall work with the WACOR to assist with follow up actions from the forum. Specific responsibilities will include:

- a. Delivering raw notes, flip charts, and other materials from the forum, preparing a draft summary report with key recommendations and priorities, and submitting a final forum report, including any materials presented as part of the forum. These may need to be formatted for posting on the SNECWRP website.

QUALITY ASSURANCE

In order to ensure the quality of data collected under this statement of work, the Contractor shall adhere to the following quality assurance guidelines:

Selection of subject matter experts for meeting participation: Subject matter experts (if any) selected for participation in the forum should have significant professional and/or research experience in one of the following fields; nutrient pollution, innovations in septic system technologies, ecosystem function and resilience; watershed science; market-based incentives; habitat restoration, especially coastal habitats; climate change; natural green infrastructure; groundwater hydrology; environmental engineering; social sciences (including anthropology and economics); integrated water resource management; or any other field identified by the WACOR.

DELIVERABLES AND SCHEDULE

0. **Workplan:** this document, not to exceed five (5) pages, shall describe the expected steps and estimated hours needed to complete each of the tasks outlined in this work assignment. The work plan shall also include a list of the key personnel that are expected to participate in each task. The final workplan will be due in accordance with contract requirements.
1. **Expert participant list:** a master list of all external experts who have been chosen for participation in the forum. Recommended experts will be developed in consultation with the WACOR and a final invitation list provided three weeks in advance of the meeting.
2. **Review summary, analysis, and draft and final reports, including annotated list of consulted sources, GIS maps, and GIS files:** draft and final reports analyzing overlaps, gaps, goals, and common issues in Rhode Island and Massachusetts and suggesting priority areas for discussion and action by SNECWRP participants. The final report shall include a summary and annotated bibliography of sources consulted, especially findings related to emerging and cost-effective approaches for managing nutrients on an ecosystem basis, inter-related roles of habitat and water quality, promotion of green infrastructure and watershed connectivity, and measures to ensure ecosystem resilience. The Contractor shall also summarize social and economic factors that may hinder or promote adoption of these approaches. All components of this summary document are due no less than two weeks in advance of the meeting.
3. **Subject matter expertise:** to be provided as needed and as requested by the WACOR.

MANAGEMENT CONTROLS

Technical direction for this work assignment is provided by the work assignment statement of work and by the work plan developed by the Contractor to implement this work assignment (after it has been accepted and approved by the CO and by the Contractor's designated management representatives). Periodic meetings between the WACOR and Contractor work

assignment managers are encouraged to discuss any questions that may arise during performance or completion of this work assignment. At the WACOR's discretion, these meetings may occur via phone, formal teleconference or video conference. The Contractor shall document these meetings and submit copies of all correspondences to the WACOR.

The Contractor shall meet with the WACOR to present and discuss the work plan for this work assignment before it is approved by the CO.

OTHER REQUIREMENTS

Travel - EPA anticipates the need for non-local travel by the contractor employees and/or subcontractors to support the scope of this work assignment. The Contractor will provide specific travel details and costs in a request for travel approval submitted for WACOR review and CL-COR signature before each trip occurs (as specified by the contract per clause H.32).

Confidential Business Information - The contractor shall, at all times, adhere to Confidential Business Information (CBI) procedures when handling industry information. The contractor shall manage all reports, documents, and other materials and all draft documents developed under this work assignment in accordance with the procedures set forth in the Office of Science and Technology Confidential Business Information (OST-CBI) Application Security Plan (June 10, 2003), or its successor approved plans.

Meetings - To avoid the perception that contractor personnel are EPA employees, contractor personnel shall be clearly identified as independent contractors of EPA when participating in events with outside parties or visiting field sites.

Limitation of Contractor Activities - The contractor shall submit drafts of all deliverables to the WACOR review prior to submission of the final product. The contractor shall incorporate all WACOR comments into all final deliverables, unless otherwise agreed upon by the WACOR. The contractor shall adhere to all applicable EPA management control procedures as implemented by the CO, CL-COR AND WACOR.

Event Expenses Not to Exceed \$20,000 - No single event under this Work Assignment is anticipated to exceed \$20,000. The Contractor shall immediately notify the CO, CL-COR AND WACOR of any anticipated event involving support for a meeting, conference, workshop, symposium, retreat, seminar or training that may potentially incur \$20,000 or more in cost during performance. Conference expenses are all direct and indirect costs paid by the government and include any associated authorized travel and per diem expenses, room charges for official business, audiovisual use, light refreshments, registration fees, ground transportation and other expenses as defined by the Federal Travel Regulations. All outlays for conference preparation should be included, but the federal employee time for conference preparation should not be included. After notifying EPA of the potential to reach this threshold, the Contractor shall not proceed with the task(s) until authorized to do so by the CO.

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 3-57				
						<input type="checkbox"/> Other <input type="checkbox"/> Amendment Number:				
Contract Number EP-C-12-021			Contract Period 09/26/2012 To 09/25/2016			Title of Work Assignment/SF Site Name				
			Base Option Period Number 3			Coastal Watershed Synthesis				
Contractor EASTERN RESEARCH GROUP, INC.					Specify Section and paragraph of Contract SOW 3.0					
Purpose: <input checked="" type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input checked="" type="checkbox"/> Work Plan Approval					Period of Performance From 09/26/2015 To 09/25/2016					
Comments:										
<input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund										
Note: To report additional accounting and appropriations data use EPA Form 1900-69A.										
SFO (Max 2) <input type="checkbox"/>										
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										
Authorized Work Assignment Ceiling										
Contract Period:		Cost/Fee: \$0.00		LOE: 0						
09/26/2012 To 09/25/2016										
This Action:		\$54,171.00		472						
Total:		\$54,171.00		472						
Work Plan / Cost Estimate Approvals										
Contractor WP Dated: 10/15/2015		Cost/Fee: \$54,171.00		LOE: 472						
Cumulative Approved:		Cost/Fee: \$54,171.00		LOE: 472						
Work Assignment Manager Name Karen Simpson						Branch/Mail Code:				
_____ (Signature) (Date)						Phone Number 617-918-1672				
						FAX Number:				
Project Officer Name Meghan Hessenauer						Branch/Mail Code:				
_____ (Signature) (Date)						Phone Number: 202-566-1040				
						FAX Number:				
Other Agency Official Name						Branch/Mail Code:				
_____ (Signature) (Date)						Phone Number:				
						FAX Number:				
Contracting Official Name Brad Heath						Branch/Mail Code:				
_____ (Signature) (Date)						Phone Number: 513-487-2352				
						FAX Number:				

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 3-58				
						<input type="checkbox"/> Other <input type="checkbox"/> Amendment Number:				
Contract Number EP-C-12-021			Contract Period 09/26/2012 To 09/25/2016 Base Option Period Number 3			Title of Work Assignment/SF Site Name Support for VMP Team				
Contractor EASTERN RESEARCH GROUP, INC.					Specify Section and paragraph of Contract SOW See PWS					
Purpose: <input checked="" type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input type="checkbox"/> Work Plan Approval						Period of Performance From 12/04/2015 To 09/25/2016				
Comments:										
<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund </div>										
Note: To report additional accounting and appropriations data use EPA Form 1900-69A.										
SFO <input type="checkbox"/> (Max 2)										
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										
Authorized Work Assignment Ceiling										
Contract Period:		Cost/Fee:			LOE:					
09/26/2012 To 09/25/2016										
This Action:										
Total:										
Work Plan / Cost Estimate Approvals										
Contractor WP Dated:				Cost/Fee:			LOE:			
Cumulative Approved:				Cost/Fee:			LOE:			
Work Assignment Manager Name Katherine Weiler <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number 202-566-1280 FAX Number:			
Project Officer Name Meghan Hessenauer <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: 202-566-1040 FAX Number:			
Other Agency Official Name <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: FAX Number:			
Contracting Official Name Brad Heath <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: 513-487-2352 FAX Number:			

**Performance Work Statement
Contract EP-C-12-021
Work Assignment 3-58**

Title: Support for the Vessels, Marinas, and Ports Team

Work Assignment Contracting Officer's Representative (WACOR):

Katherine Weiler
US Environmental Protection Agency, OWOW/MPCB
Mail Code: 4504T
WJC – West Building
1301 Constitution Ave, NW
Washington, DC 20460
202-566-1280
weiler.katherine@epa.gov

Alternate Work Assignment Contracting Officer's Representative (Alternate WACOR):

Ryan Gross
US Environmental Protection Agency, OWOW/MPCB
Mail Code: 4504T
WJC – West Building
1301 Constitution Ave, NW
Washington, DC 20460
202-566-1810
gross.ryan@epa.gov

Period of Performance: December 4, 2015 through September 25, 2016

Background:

The Office of Wetlands, Ocean, and Watersheds (OWOW) is one of four program offices within the Office of Water of the U.S. Environmental Protection Agency. The Oceans and Coastal Protection Division (OCPD) is one of three divisions within OWOW. Specifically, OCPD is responsible for protecting human health and our nation's ocean and coastal waters. OCPD uses a number of regulatory and non-regulatory tools to prevent pollution from entering the environment, reduce the risks associated with pollution, and improve water quality. The Marine Protection, Research, and Sanctuaries Act; Clean Water Act; Marine Plastics Pollution Research and Control Act; Water Resources Development Act; Shore Protection Act; Clean Vessel Act; National Environmental Policy Act; and Clean Air Act are some of the statutory authorities used by OCPD. OCPD also works with international treaties such as the London Dumping Convention and the International Convention for the Prevention of Pollution from Ships (MARPOL). In addition, OCPD works with other Federal agencies, state and local governments, public interest and industry groups, and mixed-government consortia to obtain the greatest environmental improvement. Benefits are maximized via the involvement and participation of appropriate environmental "stakeholders" and "partners."

Purpose:

This Work Assignment (WA) provides overall support to the Vessels, Marinas, and Ports Team. The WA will support development of outreach and technical documents related to discharges and environmental issues related to vessels, ports, and marinas. Support will include determining and assessing the current practices for environmental protection and assessing the impacts of discharges on the aquatic environment.

In addition to general programmatic support, the contractor will locate and analyze available vessel sewage related data. Data collected and analyzed under this work assignment will help the Agency assess the efficacy of the current vessel sewage regulatory regime and the potential need for revisions to the performance standards for marine sanitation devices (MSDs) under Section 312 of the Clean Water Act.

General Work Assignment Requirements

Confidential Business Information: The Contractor will, at all times, adhere to Confidential Business Information (CBI) procedures, including those requirements listed at 40 CFR Part 2, when handling industry information that the EPAWACOR identifies as CBI. When noted as necessary by the EPA COR, the Contractor will manage specified reports, documents, and other materials, as well as specified draft documents developed under this WA in accordance with the procedures set forth in its “Security Plan for Handling Confidential Business Information Under the Clean Water Act (CWA),” dated March 5, 2004 or its successor approved plans.

Identification as Contractor Staff: To avoid the perception that contractor personnel are EPA employees, Contractor personnel shall be clearly identified as independent contractors of EPA when participating in events with outside parties and visiting field sites. When speaking with the public the contractor should refer all interpretations of policy to the WACOR.

Limitation of Contractor Activities: The Contractor shall submit drafts of all deliverables to the WACOR and alternate EPA COR for review. The contractor shall incorporate all WACOR comments into the final deliverables, unless otherwise agreed upon by the WACOR. The Contractor shall adhere to all applicable EPA management control procedures as implemented by the EPA Contracting Officer (CO), Contract Level Contracting Officer Representative (CLCOR), and Work Assignment Contracting Officer Representative (WACOR).

Compliance with Section 508 Requirements: Section 508 of the Rehabilitation Act mandates that all Federal departments and agencies make electronic and information technology accessible to individuals with disabilities. This includes all individuals with disabilities wishing to access Federal information. EPA is committed to making every possible effort to ensure that all electronic and information technology developed, procured, maintained, or used by EPA is accessible to all persons with disabilities. Consequently, according to the contract clause “EPAAR 1552.2119-79: Compliance with EPA Policies for Information Resources Management,” all deliverables submitted by the Contractor shall be compliant with the Section 508 requirements.

Travel: When travel outside of the local area becomes necessary in support of this WA, a travel authorization must be submitted to and approved by the WACOR and the EPA LCCOR prior to the travel taking place. All travel shall be in accordance with FAR 31.205-46.

Draft and Deliverable format: All memos, draft comments, summaries and responses are to be provided electronically in Microsoft Word and/or Excel. The contractor shall clearly specify the methods, procedures, considerations, assumptions, relevant citations, data sources and data that support its conclusions. EPA will review all outputs in draft form, and the contractor shall incorporate the changes specified by EPA prior to providing a final version. All final materials, e.g., memos, tables, spreadsheets, etc. are to be prepared only after incorporating comments on draft documents provided by the WACOR. Final materials shall be submitted electronically in MS Word, Excel or PowerPoint (including track changes versions) and in pdf form. No documents produced by the contractor for EPA under this work assignment shall be proprietary.

Meetings: To avoid the perception that contractor personnel are EPA employees, contractor personnel shall be clearly identified as independent contractors of EPA when participating in events with outside parties or visiting field sites. NOTE: This Work Assignment has received authorization to proceed with the meeting exceeding \$20,000. (No single event under this Work Assignment is anticipated to exceed \$20,000. The Contractor shall immediately notify the EPA Contracting Officer, PO and WAM of any anticipated event involving support for a meeting, conference, workshop, symposium, retreat, seminar or training that may potentially incur \$20,000 or more in cost during performance. Conference expenses are all direct and indirect costs paid by the government and include any associated authorized travel and per diem expenses, room charges for official business, audiovisual use, light refreshments, registration fees, ground transportation and other expenses as defined by the Federal Travel Regulations. All outlays for conference preparation should be included, but the federal employee time for conference preparation should not be included. After notifying EPA of the potential to reach this threshold, the Contractor shall not proceed with the task(s) until authorized to do so by the Contracting Officer.)

Quality Assurance: The Contractor shall adhere to its Quality Management Plan that is customized for this contract and incorporated in this contract. This Work Assignment involves the use of existing data. EPA policy requires that an *approved* Quality Assurance Project Plan (QAPP) be in place before any work begins that involves the collection, generation, evaluation, analysis or use of environmental data. Task 1, 2, 3, and 6 can begin prior to EPA approving the QAPP.

- Under no circumstances shall work that involves the generation, collection, evaluation, analysis, or use of environmental data be performed until the Contractor receives written notification from the EPA COR that EPA has approved the Contractor's QAPP.
- Any non-sampling/non-analytical work that involves the generation, collection, evaluation, analysis, or use of environmental data that is initiated prior to EPA approval of the Contractor's QAPP must be performed in accordance with the approved QAPP. EPA may request the Contractor to furnish written documentation from the Contractor showing that the Contractor has complied with this requirement.

The Contractor shall write a Project QAPP that addresses systematic planning for this Work Assignment. The contractor shall use the active voice. The QAPP shall provide enough detail to clearly describe objectives of the project supported by the Work Assignment; the type of data to be collected, generated, or used under this Work Assignment to support the project objectives; the quality objectives needed to ensure that these will support the project objectives; and the quality assurance and quality control activities to be performed to ensure that any results obtained are documented and are of the type, quality, transparency, and reproducibility needed.

The QAPP must be consistent with the document, *EPA Requirements for Quality Assurance Project Plans: EPA QA/R-5* (<http://www.epa.gov/quality/qs-docs/r5-final.pdf>). The QAPP shall include any SOPs or checklists. The Contractor shall use the attached QAPP Template for existing data. The Contractor shall provide a crosswalk between the submitted QAPP and this template if the Contractor follows a different format. The Contractor shall comply with all QA/QC requirements set forth in the QAPP.

In addition, the Contractor shall include a separate and identifiable discussion in all reports (deliverables) about the quality of the data, and summarize the QA/QC activities that were or will be used to ensure and confirm the usability of the data for the project, identify any deviations from QA protocols (e.g., from the QAPP), problems encountered and corrective actions taken, and any limitations on the usability of the data for the purposes intended.

The Contractor also shall comply with the following procedural requirements related to compliance with the QAPP:

- The Contractor shall submit all drafts and final QAPP in Microsoft Word format, and in tracked changes as appropriate. The Contractor may also submit these documents in PDF format.
- The Contractor shall notify the WACOR if it determines that changes to the QAPP are warranted (e.g., due to organizational changes, revised technical approaches, or other unforeseen circumstances).
- If, during the Period of Performance of this WA, the WACOR provides technical direction that revisions to the QAPP are necessary, the Contractor shall follow all procedures and requirements set forth for development of the original QAPP, as specified above. The Contractor shall include a version history page that summarizes changes made. The Contractor also shall provide EPA with copies of any modified SOPs or checklists.
- All QA documentation prepared under this WA, shall be considered non-proprietary, and shall be made available to the public upon request.

As this work assignment will use only existing secondary sources of data, the contractor may want to consider referencing the EPA New England Quality Assurance Project Plan Guidance For Environmental Projects Using Only Existing(Secondary) Data (PDF) (10 pp, 128K) US EPA New England Region, Revision 2, October 13, 2009, when drafting the QAPP.

Description of Tasks

Task 1: Project Management

The Contractor shall prepare a work plan within 30 calendar days of receipt of WA. The work plan shall present the technical approach by task; the project schedule and deliverables; staffing details; level of effort by task, staff member, and professional labor mix; and the estimated budget.

The Contractor shall finalize the Quality Assurance Project Plan (QAPP) for secondary (existing) data handling and analysis. No collection of field samples will be collected under this work assignment.

The Contractor shall provide electronic copies of the monthly progress reports to the EPA Contract Level Contracting Officer Representative (CLCOR) (previously titled Project Officer (PO)) and Work Assignment Contracting Officer Representative (WACOR). Each progress report shall describe the technical work and expenditures for the same time period as the corresponding invoice. The reports shall list by task the amount of work completed and include a table of hours by personnel for each task. The reports also shall identify any problems or difficulties, lessons learned, Quality Assurance (QA)/Quality Control (QC) activities, and next steps.

The Contractor shall submit an email that proposes a standardized naming convention and version control for all deliverables associated with the WA. This system will ensure that deliverables are clearly named and dated and that the sequence of versions of a document is clear. The WACOR will review the email and then provide the Contractor with written notification of approval or edits that need to be made. After receiving notification of approval the contractor shall use this standardized convention for all deliverables associated with the work assignment.

The Contractor shall immediately notify the WACOR by telephone of any problems that may impede performance, along with any corrective actions needed to solve the problems.

<i>TASK 1 – Deliverables and Schedule</i>	
Deliverable	Deadline
1.1 - Work plan, with budget, and draft Quality Assurance Project Plan (QAPP)	Within 5 days of receipt of work assignment
Final Quality Assurance Project Plan	Within one week of receipt of EPA's written comments on the draft QAPP, unless otherwise directed by the WACOR
1.2 - Progress/budget/QA reports	Included in the Monthly Technical and Cost Progress Report
1.3 - Problem report	Contractor shall notify the WACOR immediately upon discovery of a problem

Task 2: General Technical Support

- (a) The Contractor shall provide approximately 50 hours of technical support for responding to inquiries from senior management, or the public on matters related to sewage pollution from vessels, marinas, and ports. The Contractor's responses shall include pertinent information gathered or developed by the Contractor, as well as information provided by the WACOR. The WACOR will specify the extent of the contractor's information gathering or development through written technical direction. Contractor responses may include data displays, summary reports, meeting materials, and any supporting records.

<i>TASK 2 – Deliverables and Schedule</i>	
Deliverable	Deadline
General technical support	Schedule will be specified upon receiving written technical direction

Task 3 – Locate, organize, and create an electronic PDF library for vessel sewage information (e.g., FR Notices, Guidance Documents, Policy Statements) in regards to NDZs and MSDs

- (a) The contractor shall search through EPA's NDZ website and the FR archives to identify and PDF all FR notices related to NDZs. The files should be organized by date and EPA Regions. The majority are already available on EPA's NDZ website.
- (b) The contractor shall search through FR Notices, Cornell Law, Fastcase and other sources for guidance documents and statements of policy regarding vessel sewage from MSDs and the designation and use of NDZs under CWA Section 312.
- (c) The contractor shall search through FR Notices, Cornell Law, Fastcase and other sources for guidance documents and statements of policy regarding vessel sewage as it relates to CWA 301 and 402.
- (d) The contractor shall sort, organize, and PDF as appropriate hard copy files in OCPD/OWOW related to vessel sewage. Files to be provided.

<i>TASK 3 – Deliverables and Schedule</i>	
Deliverable	Deadline
Develop draft organization for electronic filing system	30 business days after work plan approval
Final electronic filing system	30 business days after WACOR provides comments on the draft filing system

Task 4: Update the Manufacturing Spreadsheet (Attachment 1) with the manufacturing details associated with approved MSDs

The Contractor shall update the performance test data (tests conducted from January 1, 2004 to present) for marine sanitation devices (MSDs) certified to meet the performance standards and testing requirements, as described at 33 C.F.R. Part 159.

The Contractor shall update performance test data for sewage treatment plants (STPs) certified to meet the MARPOL Annex IV effluent standards and performance tests adopted by the Marine Environment Protection Committee (MEPC) in the following resolutions:

- MEPC.2(VI) on December 3, 1976, or
- MEPC.159(55) on October 13, 2006, or
- MEPC. 227(64) on October 5, 2012.

EPA will provide the Contractor with the existing spreadsheet electronically. The Contractor may modify or supplement the example spreadsheet, but shall submit a draft spreadsheet with any proposed modifications to the WACOR for approval.

The final product shall include product information and performance data of the systems (MSDs and STPs) including, but not limited to, the following information:

<u>General Product Information</u>	<u>Performance Data</u>
<ul style="list-style-type: none"> - Manufacturer name and contact information (address, phone/fax number, e-mail address, website address) - Model name/number - Date letter of certification/type approval certificate was issued (and copy, if available) - Approval status (Approved, Expired, Former – Do Not Use, Former – May Use) (MSD only) - Approval number (MSD only) (in gallons per day) - Rated capacity - Dilution factor (if any) - Pretreatment method (if any) - Treatment method (if any) - Disinfection method (if any) - Cost (equipment price; annual operating and maintenance cost; maintenance schedule, installation cost (new vs retrofit) - Type I, II or III (MSD only) - Certifying country/body - Testing methodology/testing protocol - System designed for graywater only, sewage only, or graywater and sewage - Information regarding the volume of process water added per unit volume of raw influent - Testing location (laboratory or on vessel) 	<ul style="list-style-type: none"> - Certification testing date(s) - Influent and effluent total suspended solids concentrations - Influent and effluent fecal coliform concentrations - Influent and effluent thermotolerant coliform concentrations - Influent and effluent E. coli concentrations - Influent and effluent five-day biological oxygen demand (BOD₅) - Influent and effluent chemical oxygen demand - Effluent pH - Effluent total residual chlorine/total residual oxidant - Number of samples collected - Number of zero or non-detected values (include method detection limit (MDL) and method reporting limit (MRL)) - Laboratory name and contact information (address, phone/fax number, e-mail address)

<i>TASK 4 – Deliverables and Schedule</i>	
Deliverable	Deadline
Draft electronic spreadsheet	Within 45 business days of WA approval
Final electronic spreadsheet	Within 20 business days after WACOR provides comments on the draft spreadsheet

Task 5: Conduct a literature review for documents containing product information and performance test data for marine sanitation devices and sewage treatment plants

The Contractor shall conduct a literature review for documents/literature articles containing performance data (January 1, 2010 to present) for new marine sanitation devices (MSDs), and vessel Sewage Treatment Plants (STPs) that meet or exceed the domestic or international performance standards.

The Contractor shall include in this review relevant scientific, technical and academic journals, magazines and publications, as well as relevant trade publications and other industry sources. The Contractor shall also review relevant class society and government websites and databases pertaining to the certification of MSDs or STPs, including the U.S. Coast Guard’s Maritime Information Exchange (CGMIX) database (available at <http://cgmix.uscg.mil/Default.aspx>). The Contractor shall use scientific databases such as “Science Direct,” “Cambridge Science Abstracts,” and “Web of Science.”

The Contractor shall document the procedures used to conduct the literature search. Such documentation shall include the names of databases, search engines, or registers used.

The Contractor shall create an indexing system to organize the documents and information obtained. The indexing system should include the following information:

- The title, author and publication date of the document;
- The type of document (e.g., journal, government agency, class society, or manufacturer publication);
- Provides appropriate citation for the document (web address, journal information, or agency document number); and
- Briefly summarizes what general product information and performance data is contained in the document (*see* table under Task 4 for needed information and data).

<i>TASK 5– Deliverables and Schedule</i>	
Deliverable	Deadline
Perform literature review	Within 14 business days of WP approval
Draft indexing system proposal	Within 21 business days
Final indexing and corresponding documents obtained during literature review	Within 21 business days after WACOR provides comments on the draft indexing proposal

Task 6 – Update the Pollutant Load Scenarios Spreadsheet (Attachment 2). Create an NDZ template tool that can be used by a State or EPA to calculate total vessel sewage loads within discrete waterbodies

The Contractor shall update the existing pollutant load scenarios spreadsheet. The Contractor shall create a standardized tool to be used by States interested in establishing a NDZ for sewage. The standardized tool should be an easy to use “spreadsheet” that allows states and environmental organization to input pertinent

data regarding the number and types of vessels operating in a waterbody to produce an overall estimate of the volume of untreated and treated sewage entering the waterbody.

<i>TASK 6 – Deliverables and Schedule</i>	
Deliverable	Deadline
Updated spreadsheet	Within 30 business days after work plan approval
Draft electronic tool	Within 60 business days after completing updated spreadsheet
Final electronic tool	Within 20 business days after WACOR provides comments on the draft electronic tool

Task 7 – Assess commercial vessel pump out facilities

Develop white paper that analyzes commercial vessel pump out facilities. Analysis should at a minimum include both fixed pump-out facilities and pump-out vehicles. White paper should include but not be limited to answering the questions below:

- What types of commercial pump-out facilities exist?
- What are the costs associated with using a commercial pump-out facility?
- What are the costs associated with building a commercial pump-out facility?
- How do commercial pump-outs differ from recreational pump-out facilities?

<i>TASK 7 – Deliverables and Schedule</i>	
Deliverable	Deadline
Draft White Paper	Within 60 business days of after work plan approval
Final White Paper	Within 20 business days after WACOR provides comments on the draft white paper

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 3-58			
						<input type="checkbox"/> Other <input type="checkbox"/> Amendment Number:			
Contract Number EP-C-12-021			Contract Period 09/26/2012 To 09/25/2016 Base Option Period Number 3			Title of Work Assignment/SF Site Name Support for VMP Team			
Contractor EASTERN RESEARCH GROUP, INC.				Specify Section and paragraph of Contract SOW See PWS					
Purpose: <input checked="" type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input checked="" type="checkbox"/> Work Plan Approval						Period of Performance From 12/04/2015 To 09/25/2016			
Comments:									
<input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund									
Note: To report additional accounting and appropriations data use EPA Form 1900-69A.									
SFO <input type="checkbox"/> (Max 2)									
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars) (Cents)	Site/Project (Max 8)	Cost Org/Code
1									
2									
3									
4									
5									
Authorized Work Assignment Ceiling									
Contract Period: Cost/Fee: \$0.00 LOE: 0 09/26/2012 To 09/25/2016									
This Action: \$46,078.00 471									
Total: \$46,078.00 471									
Work Plan / Cost Estimate Approvals									
Contractor WP Dated: 12/30/2015 Cost/Fee \$46,078.00 LOE: 471									
Cumulative Approved: Cost/Fee \$46,078.00 LOE: 471									
Work Assignment Manager Name Katherine Weiler <div style="border-bottom: 1px solid black; width: 100%;"></div> <div style="display: flex; justify-content: space-between; font-size: small;"> (Signature) (Date) </div>						Branch/Mail Code: Phone Number: 202-566-1280 FAX Number:			
Project Officer Name Meghan Hessenauer <div style="border-bottom: 1px solid black; width: 100%;"></div> <div style="display: flex; justify-content: space-between; font-size: small;"> (Signature) (Date) </div>						Branch/Mail Code: Phone Number: 202-566-1040 FAX Number:			
Other Agency Official Name <div style="border-bottom: 1px solid black; width: 100%;"></div> <div style="display: flex; justify-content: space-between; font-size: small;"> (Signature) (Date) </div>						Branch/Mail Code: Phone Number: FAX Number:			
Contracting Official Name Brad Heath <div style="border-bottom: 1px solid black; width: 100%;"></div> <div style="display: flex; justify-content: space-between; font-size: small;"> (Signature) (Date) </div>						Branch/Mail Code: Phone Number: 513-487-2352 FAX Number:			

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 3-59				
						<input type="checkbox"/> Other <input type="checkbox"/> Amendment Number:				
Contract Number EP-C-12-021			Contract Period 09/26/2012 To 09/25/2016 Base Option Period Number 3			Title of Work Assignment/SF Site Name State Nutrient Reduction				
Contractor EASTERN RESEARCH GROUP, INC.					Specify Section and paragraph of Contract SOW 3 and 4					
Purpose: <input checked="" type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input type="checkbox"/> Work Plan Approval						Period of Performance From 10/15/2015 To 09/25/2016				
Comments:										
<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund </div>										
Note: To report additional accounting and appropriations data use EPA Form 1900-69A.										
SFO <input type="checkbox"/> (Max 2)										
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										
Authorized Work Assignment Ceiling										
Contract Period:		Cost/Fee:			LOE:					
09/26/2012 To 09/25/2016										
This Action:										
Total:										
Work Plan / Cost Estimate Approvals										
Contractor WP Dated:				Cost/Fee:			LOE:			
Cumulative Approved:				Cost/Fee:			LOE:			
Work Assignment Manager Name Paul Shriner <div style="display: flex; justify-content: space-between;"> <div>_____</div> <div>_____</div> </div> <div style="display: flex; justify-content: space-between;"> <div>(Signature)</div> <div>(Date)</div> </div>							Branch/Mail Code:			
							Phone Number 202-566-1076			
Project Officer Name Meghan Hessenauer <div style="display: flex; justify-content: space-between;"> <div>_____</div> <div>_____</div> </div> <div style="display: flex; justify-content: space-between;"> <div>(Signature)</div> <div>(Date)</div> </div>							FAX Number:			
							Branch/Mail Code:			
Other Agency Official Name <div style="display: flex; justify-content: space-between;"> <div>_____</div> <div>_____</div> </div> <div style="display: flex; justify-content: space-between;"> <div>(Signature)</div> <div>(Date)</div> </div>							Phone Number: 202-566-1040			
							FAX Number:			
Contracting Official Name Brad Heath <div style="display: flex; justify-content: space-between;"> <div>_____</div> <div>_____</div> </div> <div style="display: flex; justify-content: space-between;"> <div>(Signature)</div> <div>(Date)</div> </div>							Branch/Mail Code:			
							Phone Number: 513-487-2352			
							FAX Number:			

**Performance Work Statement
Contract EP-C-12-021
Work Assignment 3-59**

Title: Reducing Phosphorus and Nitrogen Pollution through State Nutrient Reduction Activities

Work Assignment Contracting Officer's Representative (WACOR):

Paul Shriner
U.S. EPA/OW/OST/EAD (4303T)
EPA West, Room 6233
1200 Pennsylvania Ave., N.W.
Washington, DC 20460
Phone: 202-566-1076
Fax: 202-566-1053
E-mail: shriner.paul@epa.gov

Period of Performance (POP): October 15, 2015 through September 25, 2016

Level of Effort (LOE): 4,500 Hours

New Contracting Terminology From Environmental Protection Agency Acquisition Guide (EPAAG) Subsection 1.6.5
Contract-Level Contracting Officer's Representative (CL-COR) = Project Officer (PO)
Alternate Contract-Level Contracting Officer's Representative (Alternate CL-COR) = Alternate Project Officer (APO)
Work Assignment Contracting Officer's Representative (WACOR) = Work Assignment Manager (WAM)
Alternate Work Assignment Contracting Officer's Representative (Alternate WACOR) = Alternate Work Assignment Manager (AWAM)

Introduction:

Over the last 50 years, the amount of nitrogen and phosphorus pollution entering the nation's waters has escalated dramatically. The excess levels of nutrients has degraded drinking water quality and environmental water quality. Nutrients have the potential to become one of the costliest and most challenging environmental problems we face. States need to be able to respond to local water quality needs, and will need a variety of tools and resources to successfully achieve effective and sustained progress towards nutrient reductions.

A framework for partnering with states to address nutrient issues was re-initiated in 2011 by then Acting Assistant Administrator Nancy Stoner in a March 16, 2011 memo "Working in Partnership with States to Address Phosphorus and Nitrogen Pollution through Use of a Framework for State Nutrient Reduction." Recommended framework elements include:

identifying major watersheds that account for a substantial portion of the nitrogen and phosphorus loadings; ensuring effective permitting in targeted/priority watersheds for municipal facilities that contribute to significant measurable nutrient loadings; establishing numeric goals for loading reductions for targeted/priority watersheds; and verifying that load reduction practices are in place. Accountability measures include verifying that load reduction practices are in place. To assess and demonstrate progress in implementing and achieving load reduction goals, a baseline of existing nutrient loads and current best management practices (BMPs) needs to be established, and ongoing sampling and analysis are needed to provide regular seasonal measurements of nutrient loads leaving a watershed.

This work assignment provides support to further EPA's commitment to partnering with states and collaborating to make greater progress in accelerating the reduction of nutrient loads to the nation's waters. The Office of Water is collecting data to evaluate the nutrient removals and related technology performance by all types of Publicly Owned Treatment Works (POTWs) nationwide. The Office of Wetlands, Oceans, and Watersheds will be leading the effort. The Office of Science and Technology will provide survey expertise and assistance on the technical portions of this effort. This is a comprehensive data collection effort including a screener survey and a detailed technical survey, to be followed by one to two years of sampling and monitoring by select POTWs to assess in-plant performance. The effort fills numerous data gaps not addressed by other existing sources of information, including the Clean Water Action Needs Survey (CWNS), existing monitoring data obtained from EPA's Integrated Compliance Information System (ICIS), and the existing literature. The survey would help: establish baseline loads of nutrients to watersheds, identify technologies in place, assess the performance of these technologies, identify operational and management practices that allow POTWs to maximize the effectiveness of their existing technologies, and collect cost and labor information on these operational and management practices. The information would inform basic policy regarding nutrient contributions from municipalities; support states with information needed to set load-reduction goals; and enable states to reduce loadings through a combination of strengthened permits and reduction measures.

This effort is likely to raise interest and concerns amongst many stakeholders. The collected information would provide support to numerous programs throughout the Office of Water. Similarly, environmental groups, other programs, and other federal agencies may support information collection in an area that has many critical data gaps. POTWs, municipalities, the National Association of Clean Water Agencies, and others may view the effort as gearing up to establish additional regulations. Environmental groups will be interested in the data as an indicator of baseline performance as well as a tool for promoting more stringent nutrient limits in a variety of venues. The agricultural community may be critical of the effort, as the detailed information may, as a result of clearly identifying the nutrient contributions of municipalities, result in greater focus on non-point sources of pollution in some watersheds.

Under this work assignment, the contractor will provide technical support to EPA in developing both the screener and the detailed survey; sampling and monitoring plans; data management and analysis; final reports; and communications of findings. In addition, the contractor will provide support to EPA with the following tasks:

- Develop a work plan;
- Provide monthly progress reports;
- Assist in developing and maintaining a schedule;
- Develop and maintain a database;
- Prepare quarterly Quality Assurance reports;
- Provide technical support to EPA in evaluating facilities for site visits and sampling, including support of plant specific protocols;
- Provide technical support to EPA for preparing and maintaining documentation and analysis;
- Information Collection Requests (ICR) and related Federal Register (FR) notices for survey approval;
- Literature reviews;
- Prepare reports of data summaries, analyses, and findings;
- Provide technical support to EPA for briefings and for stakeholder outreach activities; and,

During this work assignment, the contractor will provide the following deliverables to EPA:

- Work plan and cost estimate;
- Monthly progress reports;
- Any necessary revisions to existing QAPPS and PQAPPs, if required by EPA;
- Quarterly Quality Assurance reports;
- Memorandums describing database development;
- Memorandums documenting the stratification developed for the survey;
- Memorandums documenting screener and detailed survey questions
- QAPPs and related QIA documentation for site-specific site visits and sampling;
- Cost estimates for sampling;
- Data summaries;
- Documentation of data analyses, draft analyses, and supporting materials;
- Communication materials including website materials; and,
- Quick turnaround tasks.

General Work Assignment Requirements:

Deliverable Formatting and Terminology. Throughout this Work Assignment, the contractor shall provide draft and final reports to EPA in electronic and hard copy formats. The WACOR and contractor will use the terminology in this work assignment to improve the deliverable review process. See Attachment A of the contract Performance Work Statement. The contractor shall discuss the computer file formats to be used for word processing, spreadsheet, database and graphics with the WACOR prior to file preparation. The WACOR will identify for the contractor which documents will be posted on EPA's webpage; for planning purposes, the contractor may assume the website will be a new webpage hosted by the Office of Wetlands, Oceans, and Watersheds (OWOW). These documents posted to the webpage will need to be

Section 508 compliant.¹

Travel. EPA anticipates a need for non-local travel by contractor employees and/or subcontractors to support the scope of this work assignment (e.g., site visits activities, outreach, attending scientific/technical conferences, and sampling). This may include up to five sets of site visits for the initial phase of study. The contractor will provide specific travel details and costs in a request for travel approval submitted for WACOR review and CL-COR signature before each trip occurs (as specified by the contract per clause H.32).

Confidential Business Information. The contractor will, at all times, adhere to Confidential Business Information (CBI) procedures when handling industry information. The contractor will manage all reports, documents, and other materials and all draft documents developed under this work assignment in accordance with the procedures set forth in its “Office of Science & Technology Confidential Business Information (OST-CBI) Application Security Plan,” dated December 5, 2007 or its successor approved plans. See Task 9 for more details.

Identification as Contracting Staff. To avoid the perception that contractor personnel are EPA employees, contractor personnel shall be clearly identified as independent contractors of EPA when participating in events with outside parties and visiting field sites. When speaking with the public the contractor should refer all interpretations of policy to the WACOR.

Limitation of Contractor Activities. The contractor will submit drafts of all deliverables to the WACOR for review prior to submission of the final product. The contractor will incorporate all WACOR comments into all final deliverables, unless otherwise agreed upon by the WACOR. The contractor will adhere to all applicable EPA management control procedures as implemented by the CO, CL-COR, and WACOR.

Deliverables. Major technical reports, databases, and final analyses shall be subject to internal contractor peer review by an expert(s) not directly involved in the mainstream Work Assignment tasks. Deliverables will be prepared with proper adherence to EPA style and format requirements.

Deadlines. For the purpose of developing the work plan, the contractor shall assume the deliverable due dates provided with each task. Most of the deadlines are associated with Agency established milestones which are subject to change. Based upon past experience with the planning process, and the nature of site visits and sampling subject to cooperative weather, any changes in schedule tend to result in extensions, rather than shorter schedules. In either case, if the schedule changes then the WACOR/CL-COR will change the deliverable deadlines through written technical direction. The WACOR/CL-COR also will use written technical direction to change a deadline if management requires any particular deliverable or draft deliverable earlier than specified in the following tasks. For planning purposes, the following table provides a summary of the major milestones. For planning purposes, the contractor shall assume the 2nd FR notice and ICR approval are unlikely to occur during the period of performance for this work assignment.

¹ See <http://www.epa.gov/epahome/accessibility.htm>.

Table 1-1 Major Milestones for Planning Purposes
Draft Survey and Sample Design (3 months) by January 30, 2016
Conduct outreach and solicit comment on draft surveys (4 months) by May 30, 2016
Publish 1 st FR notice (2 months) by July 30, 2016
Comment Period and Revisions (2 months) by September 30, 2016
Publish 2 nd FR notice Obtain ICR approval - TBD

Conferences, Meetings and Other Events: No single event under this Work Assignment is anticipated to exceed \$20,000. The Contractor shall immediately notify the CO, CL-COR and WACOR of any anticipated event involving support for a meeting, conference, workshop, symposium, retreat, seminar or training that may potentially incur \$20,000 or more in cost during performance. Conference expenses are all direct and indirect costs paid by the government and include any associated authorized travel and per diem expenses, room charges for official business, audiovisual use, light refreshments, registration fees, ground transportation and other expenses as defined by the Federal Travel Regulations. All outlays for conference preparation should be included, but the federal employee time for conference preparation should not be included. After notifying EPA of the potential to reach this threshold, the Contractor shall not proceed with the task(s) until authorized to do so by the CO.

Tasks:

Task 1 – Program Management:

The contractor shall develop a work plan describing the necessary steps and estimated hours to complete each of the tasks included in this work assignment. The work plan shall also include a list of the key personnel to participate in the work assignment. The contractor shall also estimate direct costs such as travel, computer costs, typing, etc.

The contractor shall provide electronic copies of the monthly progress reports to the CO, CL-COR and WACOR. Each progress report shall describe the technical work and expenditures for the same time period as the corresponding invoice. The reports shall list by task the amount of work completed and include a table of hours by personnel for each task. The reports also shall identify any problems or difficulties.

In addition to the monthly progress reports, the contractor shall prepare monthly status summaries (in a Microsoft Excel compatible format) to the WACOR and CL-COR. The monthly status reports shall list the following information by task: budgeted LOE for each task, summaries of current and cumulative costs and LOE expended for the reporting period. The monthly summaries of costs and expenditures LOE shall be provided prior to the progress report. For the purposes of developing this work plan, the contractor may assume the following hours by Task.

Task	Description	Hours
1	Work Assignment Management	300
2	Data Quality Assurance Administration	100
3	Data Management	250
4	Literature Review and Investigation	300
5	Survey Development	2110
6	Preparation and Publication of ICR	1200
7	Data Analysis and Reports	40
8	Records Management	160
9	CBI Procedures	40
	TOTAL	4500

As part of this task, the contractor will prepare an annotated timeline consistent with the milestones listed above. This annotated timeline will describe the major elements of developing these materials or conducting these investigations from beginning to end and their timing and LOE. The WACOR will use the timeline to aid in identification of all major project tasks, track the project's progress, and coordinate all aspects of the project. For planning purposes, assume the full project timeline will span 5 years. The contractor will maintain, update, and revise the annotated timeline as needed.

TASK 1 – DELIVERABLES	
Deliverable	Deadline
Work Plan and Cost Estimate	• In accordance with contract requirements
Progress Reports	• Monthly
1 st Draft - Draft Annotated Timeline	• 30 days from issuance of work assignment
Revised Annotated Timeline	• Quarterly, or within 3 days of WACOR written request

Task 2 – Quality Assurance:

2.1 Background

Quality Assurance Project Plans are required under the Agency's Quality Assurance Policy CIO-2105, formerly EPA Order 5360.1 A2 (May 2000), and implementing guidance CIO-2105-P-01-0 (May 2000). All projects that involve the generation, collection, analysis, and use of environmental data must have an approved Quality Assurance Project Plan (QAPP) in place prior to the commencement of the work. This includes both newly generated environmental data as well as that which is already existing. Examples of these environmental data operations are provided in Table 1-1 below.

Table 1-2. Examples of work that involves the collection, generation, evaluation, analysis, or use of environmental data

Item	Examples
Data	Includes field sampling information (sample location information, flow measurements, temperature, pH, physical observations, etc.), laboratory measurements (e.g., chemical, physical, biological, radiological measurements), data collected from questionnaires, economic data, census data, and any other types of existing data (i.e., data generated for a different purpose or generated by a different organization)
Data generation	Includes field studies, laboratory studies, and generation of modeling output
Data collection	Includes field surveys, questionnaire surveys, literature searches, and third party data
Data evaluation	Includes data inspection, review, assessment, and validation
Data analysis	Includes statistical, engineering, and economic analysis, and testing, evaluation, and validation of methods and models; database creation, data extraction, and data manipulation
Data Use	Any use of data to support EPA decisions, regulations, policy, publications, or tools (including effluent guidelines, 304(m) program, standards, environmental assessments, and models, tools, or reports disseminated by EPA to assist other organizations in implementing environmental programs)

QAPPs are required for the development or revision of models and software that support the generation, collection, evaluation, analysis, or use of data. (A model is set of equations and assumptions used to predict unknown data.) When existing models are used as a tool to generate or evaluate data, the project QAPP must describe the model and explain how it will be used and how its output will be evaluated to ensure the modeling effort meets the overall quality objectives for the project. Development or revision of new models also must be supported by a QAPP that describes the objectives for the model, the quality criteria that will be applied to the model, and the procedures for evaluating whether the model meets those criteria.

2.2 QA Project Plan Requirements

The Contractor has previously prepared a contract-wide Programmatic QAPP (PQAPP) for Contract EP-C-12-021. This PQAPP describes, in a single document, information that is not site or time-specific, but applies throughout the program (i.e., the duration of the contract). When tasked with preparing the PQAPP, the Contractor was informed that the PQAPP may need to be supplemented with project-specific details to support individual work assignments that involve the collection, generation, evaluation, analysis, or use of environmental data for which the PQAPP may not be applicable. As a result, the Contractor prepared a Supplemental QAPP (SQAPP) specific to the IWTT Project described in Task 8 of that project. Both the PQAPP and SQAPP have been approved by EPA and cover activities envisioned under this work assignment. See Appendix 1 of this work assignment for the checklist of existing PQAPP elements justifying the

use of that PQAPP for this work assignment. For planning purposes, the Contractor may assume they will continue operating under the existing PQAPP and SQAPP and that these two documents address the initial QA requirements for this work assignment. The contractor shall prepare an addendum to the PQAPP/SQAPP to address any additional or different QA requirements for this work assignment.

The activities in this work assignment involve gathering, evaluating, analyzing, and otherwise using existing environmental data (also known as “secondary data”). In support of this work assignment, the Contractor shall ensure that the work plan provides enough detail to clearly describe:

- Specific objectives of the project(s) supported by this work assignment, including typical questions that must be answered when collecting and analyzing existing data to support the development of EPA’s biennial 304m plan.
- The type of data to be gathered or used under this work assignment to support the project objectives—including data from search engines, federal databases, EPA databases—as a well as a rationale for when those databases are appropriate and what data available in each will support the project
- The quality objectives needed to ensure the data will support the project objectives, and
- The QA/QC activities to be performed to ensure that any results obtained are documented and are of the type, quality, transparency, and reproducibility needed.

2.3 Additional QA Documentation Required

The EPA Quality Manual for Environmental Programs (CIO 2105-P-01-0, May 2000) requires published Agency reports containing environmental data to be accompanied by a readily identifiable section or appendix that discusses the quality of the data and any limitations on the use of the data with respect to their originally intended application. The EPA Quality Manual further requires Agency reports to be reviewed by the QA manager (or other authorized official) before publication to ensure that an adequate discussion of QA and QC activities is included. The purpose of the review is to ensure the reports provide enough information to enable a knowledgeable reader to determine if the technical and quality goals were met for the intended use of the data. Reports should include applicable statements regarding the use of any environmental data presented as a caution about possible misuse of the data for other purposes. For example, a Study Report must include a clear discussion of the quality management strategies (including the project goals and objectives, quality objectives and criteria, and QA/QC practices) that were employed to control and document the quality of data generated and used. Analytical Reports shall include a discussion of sensitivity analysis and robustness of the data set. These documents should also discuss any deviations from procedures documented in the EPA-approved QAPP(s) supporting the project, the reasons for those deviations, any impact of those deviations had on data quality, and steps taken to mitigate data quality issues.

In support of this Agency requirement, all major deliverables (e.g., Technical Support Documents, Study Reports, Analytical Methods) produced by the Contractor under this work assignment must include a discussion of the QA/QC activities that were performed to support the deliverable, and this discussion must provide a sufficient level of detail to allow the EAD QA Coordinator (or designee) to determine if the QA/QC strategies implemented for the project sufficiently support the

intended use of the data.

The Contractor also shall provide EPA with monthly reports of QA activities performed during implementation of this work assignment. These monthly QA reports shall identify QA activities performed to support implementation of this work assignment, problems encountered, deviations from the QAPP, and corrective actions taken. If desired, the Contractor may include this as a part of the contract-required monthly financial/technical progress report.

2.4 Data Quality Act/Information Quality Guidelines Requirements

The Data Quality Act (also known as the Information Quality Act) requires EPA to ensure that influential information disseminated by the Agency is sufficiently transparent in terms of data and methods of analysis that the information is capable of being substantially reproduced. To support compliance with these data transparency/ data reproducibility requirements, EPA plans to include QAPPs as part of any rulemaking record documentation to be made available to the public. (This includes PQAPPs and SQAPPs.) The Contractor may claim information in QAPPs as confidential; if the Contractor chooses to do so, the Contractor shall submit a public version and a confidential version at the time the QAPP is submitted for approval by EPA.

Information contained in the approved QAPP shall be transparent and reproducible and meet the requirements of the Data Quality Act for influential information. EPA's *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity, of Information Disseminated by the Environmental Protection Agency* (EPA/260R-02-008, October 2002), referred to as "EPA's Information Quality Guidelines," describe EPA procedures for meeting Data Quality Act requirements. Section 6.3 of EPA's Information Quality Guidelines indicate that "especially rigorous robustness checks" should be applied in circumstances where quality-related information cannot be disclosed due to confidentiality issues. Where applicable, the Contractors should indicate which results were obtained using the tools (SOPs, checklists, and guidelines) that the Contractor designates as confidential so that the WACOR can easily identify the areas that shall require rigorous robustness checks and document that those checks have been performed. At the discretion of the WACOR through technical directives, the Contractors may be requested to prepare pre-dissemination review checklists as described in Section 5.5 of the Office of Water - Quality Management Plan, February 2009.

Deliverables and schedule under Task 2

TASK 2 – DELIVERABLES	
Deliverable	Deadline
Addendum to SQAPP	• 10 days after notification by the WACOR via Technical Direction (TD) that an addendum to the SQAPP is needed
Revisions to S/PQAPP based on EPA feedback	• 7 days after receipt of EPA feedback from WACOR via TD

Final SQAPP for this Work Assignment	• 5 days after EPA feedback from WACOR via TD
PQAPP/SQAPP progress reports	• Monthly

Task 3 – Data Management:

Screeners and detailed questionnaires will be developed and administered to collect baseline, operational, and environmental data. The contractor shall maintain a database including facility responses including: facility specific characteristics such as design capacity and average daily flow; technology train and related technical data; waterbody; influent data; effluent data; in-plant data; costs of operating unit processes. This task includes management of input files, raw data, and tracking spreadsheets. Under this task, the contractor shall maintain the integrity and version control of the database.

TASK 3 – DELIVERABLES	
Deliverable	Deadline
Draft database management concept memo	• January 30, 2016
Revisions to memo	• 7 days after receipt of EPA feedback from WACOR via TD
1 st Draft database	• April 30, 2016
Revised database	• 5 days after EPA feedback from WACOR via TD

Task 4 – Literature Review and Site Investigation

This task includes supplemental data collection, including literature reviews and site visits, to inform the survey development process. EPA will provide the initial list of key references and existing databases to support this effort, including the sample frame developed by OCSPP (to be provided by the WACOR). This task includes a review of the latest Clean Water Needs Survey report to Congress, a report likely to be released during the POP of this Work Assignment, and the general permit references provided by the WACOR. To further inform the survey development, one or more site visits may be conducted. For planning purposes, the contractor shall assume these site visits will be to two or more facilities clustered in a single geographic region, and that no more than five such trips will be conducted during the POP.

TASK 4– DELIVERABLES	
Deliverable	Date
Review of CWNS report to congress and the general permit references	<ul style="list-style-type: none"> • Within 30 days of WA approval
Memo for survey frame	<ul style="list-style-type: none"> • According to a schedule developed by the contractor and approved by the WACOR via TD
Suggestions and approach to supplemental site visits	<ul style="list-style-type: none"> • According to a schedule developed by the contractor and approved by the WACOR via TD

Task 5 – Survey Development:

Under this task, the contractor shall support EPA in developing the sample frame, the survey approach, the screener questions, and the technical survey questions. This task will include development of a sampling protocol, suggested analyte(s), identification of technologies, representative sites and facility locations for sampling, cost estimates for sampling, and related tasks. This task also includes development of site-specific sampling plans in coordination with the selected sites. Subsequent drafts of each stage of the survey may include incorporation of comments and suggestions from the EPA workgroup, states, and municipalities, the public and other interested stakeholders, as approved by the WACOR. The contractor will submit materials to EPA for review and approval prior to their implementation. When conducting outreach activities, the contractor personnel will clearly identify themselves as contractor employees both orally and via the use of identification badges.

TASK 5– DELIVERABLES	
Deliverable	Date
1 st draft screener survey	<ul style="list-style-type: none"> • February 28, 2016
1 st draft technical survey	<ul style="list-style-type: none"> • According to a schedule developed by the contractor and approved by the WACOR via TD
1 st draft sampling approach and concept memo	<ul style="list-style-type: none"> • According to a schedule developed by the contractor and approved by the WACOR via TD

Task 6 - Preparation and Publication of the ICR:

The contractor shall support EPA in preparing the two Federal Register notices, the supporting statement, any supplemental notifications, and all necessary supporting documentation. The contractor shall provide support in writing, formatting, proofing, editing and reviewing and revising the notices. The contractor shall provide support for the publication, web posting and

possible sharing of information in public meetings and other outreach efforts, including 508 formatting of all necessary documents. Note the assembly of all record information for the public and confidential records falls under Task 8. The contractor will submit materials to EPA for review and approval prior to their implementation. When conducting outreach activities, the contractor personnel will clearly identify themselves as contractor employees both orally and via the use of identification badges. Typically the contractor will be required to provide such products within 7 days or less. The contractor shall coordinate with the Office of Water Docket office to ensure the record will meet the docket's requirements including any FMDS requirements.

TASK 6– DELIVERABLES	
Deliverable	Date
Draft of the 1 st FR notice	• According to a schedule developed by the contractor and approved by the WACOR via TD
Draft of the 2 nd FR notice	• According to a schedule developed by the contractor and approved by the WACOR via TD
Draft of the ICR supporting statement	• According to a schedule developed by the contractor and approved by the WACOR via TD
Revisions to draft notices and supporting statement based on WACOR comments	• Within 7 working days after being provided by the WACOR via TD

Task 7 –Data Analysis and Reports

The contractor shall support EPA in completing reports and analysis of data collected through the survey effort. Such analysis may include profiles, national level assessments, state level assessment, trends, and possible approaches to implementing the technologies to achieve the levels of performance identified by the survey and sampling effort. The contractor shall complete the preparation of all necessary supporting documentation, data and information. The contractor shall provide support in writing, formatting, proofing, editing and reviewing draft reports to create a final reports. The contractor shall provide support for the publication, web posting and possible sharing of information in public meetings and other outreach efforts, including 508 formatting of all necessary documents.

TASK 7– DELIVERABLES	
Deliverable	Date
Outline and concept memo	• According to a schedule developed by the contractor and approved by the WACOR via TD

Task 8 –Records Management

This task requires the contractor to complete any records management. The contractor shall finish assembling all information for the public and confidential records for the survey. This task also includes loading of relevant records to the docket created for the ICR, related FR notices, and related comments. The contractor shall coordinate with the Office of Water Docket office to ensure the record will meet the docket's requirements including any Federal Docket Management System (FDMS) requirements.

Since there will be no docket for most of the work completed under this work assignment, it is appropriate to properly archive those records which should be preserved, and to destroy non-records as well as those records for which EAD no longer has any need of retention. Any CBI in the records above will be handled as described in Task 9. As a general matter, EAD tasks the Contractor with disposal of any non-CBI.

TASK 8 – DELIVERABLES	
Deliverable	Deadline
Continued Disposal of non-CBI	According to a schedule developed by the contractor and approved by the WACOR via TD
List of record items	Quarterly
Upload and list of docket materials	Within 5 days of written direction by the WACOR

Task 9 – Confidential Business Information Procedures:

During the course of the work assignment, the contractor may be accessing and evaluating CBI. As such, the contractor shall adhere to EPA's CBI policy and procedures as described in the contract statement of work, Section 1.2. The contractor must maintain CBI security clearance to use CBI information (Refer to Section H of the schedule for security requirements and 70 FR 9070; February 24, 2005). The contractor will not disclose any CBI to anyone other than EPA without prior written approval from the WACOR. The contractor shall utilize CBI in accordance with contract requirements and limitations to include using the "Office of Science & Technology Confidential Business Information (OST-CBI) Application Security Plan," dated August 1, 2011 or its successor approved plans.

TASK 9 – DELIVERABLES	
Deliverable	Deadline
A CBI program in compliance with the requirements of the contract and the requirements of the contractor's CBI Plan.	• Ongoing

Appendix 1. QA checklist for use of existing PQAPP Elements Applicable to WA 3-59
“Reducing Phosphorus and Nitrogen Pollution through State Nutrient Reduction Activities”

QAPP Element	Sufficiently Addressed in PQAPP	Not Applicable to Project	Explanatory Comments
A1. Title & Approval Sheet			
Project title			See WA
Organization's name	X		
Effective date and/or version identifier	X		
Dated signature of Organization's project manager	X		
Dated signature of Organization's QA manager	X		
Other signatures, as needed (e.g., EAD Project Officer, EAD QA Coordinator)	X		
Revision History	X		
A2. Table of Contents			
Includes sections, figures, tables, references, and appendices	X		
Document control information indicated (when required by the EPA Project Manager and QA Manager)	X		
A3. Distribution List			
Includes all individuals who are to implement or otherwise receive the QAPP and identifies their organization			See WA
A4. Project/Task Organization			
Identifies key individuals with their responsibilities (e.g., data users, decision makers, project QA manager, Subcontractors, etc.) and contact info.			
Organization chart shows lines of authority & reporting responsibilities	X		
Project QA manager position indicates independence from unit collecting/using data	X		
A5. Problem Definition/Background			
Clearly states problem to be resolved, decision to be made, or hypothesis to be tested	X		
Identifies project objectives or goals			
Historical & background information	X		
Cites applicable technical, regulatory, or program-specific quality standards, criteria, or objectives	X		
A6. Project/Task Description			
List measurements to be made/data to obtain			
Notes special personnel or equipment requirements			
Provides work schedule			
A7. Overall Quality Objectives & Criteria			
States overall quality objectives and limits needed to support the project goals and objectives cited in A5	X		
A8. Special Training Requirements/ Certifications			
Identifies specialized skills, training or certification requirements			
Discusses how this training will be provided/the necessary skills will be assured and documented			
A9. Project-level Documents & Records			
Describes process for distributing the approved QAPP and other planning documents (and updates) to staff	X		
Identifies final work products that will result from the project	X		See WA
Describes the process for developing, reviewing, approving, and disseminating the final work products and individuals responsible for these processes	X		See WA
B1. Data Needs			
Detailed list/description of the specific data elements needed to support project goals	X		
Description of the scope of the data elements that you need (e.g., data supporting specific treatment options vs. the full range of options, data supporting the entire country vs. a specific geographic region)	X		
If project includes development or update of a project database, QAPP identifies and defines each database field	X		See WA

B2. Potential Data Sources			
Identifies and describes potential sources of the existing data needed (e.g., photographs, topographical maps, facility or state files, census data, meteorological data, publications, etc.) and the rationale for their use	X		
If literature searches are used, describes the search engines that will be used and key search terms	X		
If databases or models will be used, describe the database (or model) in terms of who developed it and operates it and the type of data it contains	X		
For other potential sources, describe the potential sources & rationale for considering or using each one	X		
B3. Criteria for Selecting Data Sources			
Identifies each criterion that will be used to determine if the candidate data sources listed in B2 will meet your needs, and how each criterion is defined. (Criteria vary by project; examples include reliability, age, applicability, quantity, format, and others)	X		
Explains rating system used to evaluate source against each criterion	X		
B4. Data Value Selection Approach			
For data sources that meet the criteria identified in B3: Describes the criteria and procedures that will be used to determine which value(s) identified in the acceptable sources are most appropriate for use in the project	X		
For data that do not meet these pre-established criteria but are the only data available, explains how the decision to use such data will be made and documented	X		
B5. Resolving Data Gaps			
Describes the process for identifying and addressing data gaps that still exist after candidate data sources have been evaluated and appropriate data values have been identified	X		
Describes the process that will be used to address any new data needs revealed during the data gathering process (i.e., additional data elements not previously considered)	X		
B6. Data Gathering Documentation and Records			
Describes how results of the source selection and the data value selection will be documented, including any sources or values that were rejected and the rationale for not using them	X		
For data that are deemed acceptable and that will be used, explains how each data element will be associated to its original source citation (i.e., bibliographic information, telephone contact reports, email messages, etc.)	X		
C1. Standardization of Data Elements			
Describes the process to ensure that units and other key measures are captured and standardized (or otherwise made comparable) in the database	X		
If the project requires that all fields be standardized to a single set of units (e.g., US dollars for economic data, µg/L for chemical data), identifies the standard units that will be required for each data element	X		

Identifies the procedures for converting data reported in other units to the standardized units, including any rounding or truncating procedures, and procedures for ensuring these conversions are performed correctly	X		
If standardization of data elements is not needed, explains the process for ensuring that data presented in varying units are comparable enough for use in the project and that project staff members and other data users will be able to readily identify differences in units	X		
C2. Data Entry			
Explains the process for manually entering selected data into the project database, who will be responsible for such data entry, and the QC strategies that will be used to ensure that the database accurately and completely captures the data as presented in the original source	X		
C3. Merging or Uploading Electronic Data from Existing Sources			
If data are available electronically and will be uploaded or merged into the project database: describes the procedures that will be followed to ensure that errors are not introduced during the upload/merge process and that the final database reflects the original dataset(s)	X		
C4. Data Review			
Describes the process for ensuring that the data have been recorded, transmitted, and processed correctly	X		
C5. Data Storage and Manipulation			
Describes how the existing data will be stored	X		
Describes who will be responsible for access to and maintenance of the stored data	X		
Describes how the existing data will be incorporated with other project data to support the project goal/decision to be made	X		
Describes the QC strategies that will be employed to ensure that the integrity of the data is not compromised during data storage, access/retrieval, updates, or other manipulation	X		
D1. Data Quality Verification and Data Quality Reporting			
Describes the process for verifying that the final set of data meets the overall criteria originally specified for the project	X		
Describes how these determinations will be documented and reported	X		
For data that don't meet the pre-established specifications, explains the process for determining if they are usable and how such decisions will be documented	X		
D2. Use/Analysis of the Existing Data			
Provides details regarding the exact means in which the data will be used to meet project objectives	X		
Includes an explanation or list of the information to be calculated and the data elements that will be used to make those calculations	X		
Includes applicable calculations and equations (if known) or explanations of how they will be developed	X		
Includes plans for excluding outliers			

D3. Methodology Documentation and Conceptual Review			
If exact methodologies for analyzing the data will need to be developed or modified during the course of data analysis, explains the process by which such methodologies will be documented, who is responsible for reviewing/ approving their use, and how the methodologies will be checked to ensure they yield the desired products	X		
D4. Technical Review of the Data Analysis			
Describes activities that will be used to ensure the data analyses are being implemented as specified and will support project objectives	X		
Explains procedures for identifying and notifying appropriate personnel if changes to the originally planned procedures are warranted, and the process for approving, documenting and implementing such changes	X		
D5. Final Verification of Data Analysis and Reconciliation with User Requirements			
Describes the process for reviewing the final work product to ensure that the work was generated in accordance with the QAPP, and that the work product addresses the overall project goals and objectives	X		
Describes how the results of this assessment will be documented	X		
Describes how any limitations of the data or data analyses that were used to prepare the final work product will be documented and communicated	X		

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 3-59				
						<input type="checkbox"/> Other <input type="checkbox"/> Amendment Number:				
Contract Number EP-C-12-021			Contract Period 09/26/2012 To 09/25/2016 Base Option Period Number 3			Title of Work Assignment/SF Site Name State Nutrient Reduction				
Contractor EASTERN RESEARCH GROUP, INC.					Specify Section and paragraph of Contract SOW See PWS					
Purpose: <input checked="" type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input checked="" type="checkbox"/> Work Plan Approval						Period of Performance From 10/15/2015 To 09/25/2016				
Comments:										
<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund </div>										
Note: To report additional accounting and appropriations data use EPA Form 1900-69A.										
SFO <input type="checkbox"/> (Max 2)										
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										
Authorized Work Assignment Ceiling										
Contract Period:		Cost/Fee: \$0.00		LOE: 0						
09/26/2012 To 09/25/2016										
This Action:		\$491,107.00		4,500						
Total:		\$491,107.00		4,500						
Work Plan / Cost Estimate Approvals										
Contractor WP Dated: 11/12/2015		Cost/Fee: \$491,107.00		LOE: 4,500						
Cumulative Approved:		Cost/Fee: \$491,107.00		LOE: 4,500						
Work Assignment Manager Name Paul Shriner <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>						Branch/Mail Code: Phone Number 202-566-1076 FAX Number:				
Project Officer Name Meghan Hessenauer <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>						Branch/Mail Code: Phone Number: 202-566-1040 FAX Number:				
Other Agency Official Name <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>						Branch/Mail Code: Phone Number: FAX Number:				
Contracting Official Name Brad Heath <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>						Branch/Mail Code: Phone Number: 513-487-2352 FAX Number:				